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Ophthalmology of the Ayurvedists

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ANTIQUITY OF AYURVEDIC OPHTHALMOLOGY.—(i) *The Rigveda Period, 3000 B. C.*—The earliest appreciation of the successful effort of Ayurvedic physicians and surgeons in all branches of medical science is liberally and eulogistically recorded in Rigveda-Samhita. The Ashwini-Kumars, Indra, Agni, and others receive considerable praise for their skill in the healing of eye-diseases :—"Mighty ones ! with what powers ye gave Paravrija aid, what time ye made the blind to see and the lame to walk" (I-112-8). "Ye, Lord of many treasures ! gave the poet his perfect vision as he mourned his trouble" (I-116-14). "Ye gave Rijraswa eyes, Nasatyas ! Wonder-workers ! Physicians ! that he saw with sight that had been injured previously" (I-116-16). "Accepting his fair praises with approval, ye gave his eyes again to blinded Kanva" (I-118-7). "The Guardian Rays ! O Agni ! when they saw the blind son (Dhirghatama) of Mammata saved from affliction" (I-147-3). "Ye raised the outcast from the depths, and gave fame unto the lame and the blind" (II-13-12). "The cripple stood erect and the blind beheld them ; these things did Indra in Soma's rapture" (II-15-7). "So, I (Sachi Paulomi) found and cured thee ; thou hast returned to renewed youth ; whole in thy members ! I have given thee sight, and all thy life to thee" (X-161-5).

Similar tributes are to be found scattered in Shatapath-Bramhana, Aitareya-Bramhana (1500 B. C.), Taitareya-Samhita (2000 B. C.), &c. Eye-diseases were fairly recognised, and the modes of treatment were a subject of admiration for the learned men of the period. Medicine and surgery had made such progress since the days of the Ashwini-Kumars that a need had already been felt to divide the study of Ayurveda into special branches and to teach students to specialize in the same. The physicians and surgeons who treated parts of the body above clavicle, including ears, eyes, nose, throat, etc., were called *Madhuvidya-Visharada*. Neither treatises on, nor references to eye-diseases recording the methods of diagnosis and treatment of this period are available at present.

(ii) *The Sushruta Period. 1000 B. C.*—The authors of Charaka-Samhita consider it superfluous to describe eye-diseases, as this had already been done in Shalakya-Tantra.

Dallana mentions in his history of Ayurvedic Surgery that Dhanwantari Divodas, the king of Kashi taught the subject of surgery to twelve of his pupils. To seven of them, of whom one was Sushruta, he taught general surgery *Shalya-Tantra* ; and he taught special surgery and the medical treatment of the part of the body above the clavicle, including the ear, eye, mouth, nose, &c.,—*Shalakya-Tantra*, to five others : Bhoja, Nimi, Kankayana, Gargya, and Galava. Each of the twelve pupils wrote a Samhita or Tantra on the subject he had been taught. Sushruta, the most brilliant and versatile of them all, wrote however not only an admirable *Shalya-Tantra*, but

also a *Shalakya-Tantra* which has remained unsurpassed to this day.

Just about this period, six other *Shalakya-Tantra* written by Videha, Satyaki, Shaunaka, Karala-bhatta, Chakshushyena, and Krishnatreya appear to have been current and regarded with great esteem.

The *Tantra* by Kankayana, Gargya, and Galava have been ignored by their contemporary Ayurvedic writers and by later commentators. Bhoja is mostly cited in the discussion on the Diseases of the Mouth. Videha and Nimi have been mentioned as the best authorities on Diseases of the Eye, Ear, and Nose. Karala-bhatta, Satyaki, Madan-Shaunaka come next in order of importance and are recognised by all. Krishnatreya is quoted by Shrikantha-dutta and Shivadas ; and Chakshushyena by Shrikantha-dutta in his commentary, Madhukosha.

There are no means of ascertaining how Sushruta's Ophthalmology compared with that of Videha or Nimi. Dallana, Sushruta's commentator, has given useful quotations from Videha, and Nimi, and occasionally from Satyaki and Karala, and has thus made this subject interesting and more comprehensible. Sushruta mentions 76 eye-diseases known to Videha and Nimi, and also his discovery of *Kukunaka*, an eye-disease of infants. Karala and Kaushitaki are said to describe 96 and 80 diseases, respectively ; the names of these diseases are, however, unknown (Ch.)

(iii) *The Vagbhata Period, 600 A. D.*—Centuries later, this subject (13th *Shalakya-Tantra*) was rewritten by another brilliant scholar, Vagbhata, who describes 95 eye-diseases. He retains 57 out of the 77 mentioned by Sushruta, and describes 38 under new names. If however, the descriptions of these 38 diseases are examined carefully, 33 of them can be reliably identified with the remaining 20 of Sushruta, the larger number being due to Vagbhata considering different stages of one disease as separate entities and inventing new names for them. Such indentification carried out in part by Adhamalla, Sharangdhar's commentator, has been completed in this paper. Vagbhata revives the name *Pilla* of a chronic stage of *Klinna-Vartma* and applies it to the chronic stages of 18 diseases. He has discovered four diseases of which *Pakshma-shata and Sira-Shukra* are useful additions ; while the other two, *Krichhronmilana* and *Ushna-Vidagdha-Drishti* are difficult to place. We admit that the description of diseases was never a strong point with Vagbhata ; but to describe the same disease under two or more names (*e.g. Vatahata-Vartma*), or to describe the same disease under the same name in two different places and then count two distinct diseases *e.g.*, *Alaji*, bespeaks the height of carelessness unpardonable even in lesser authors. No wonder then that subsequent writers ignored both his classification and his descriptions. His commentators, Indu and Aruna-dutta are particularly dull where ophthalmology is concerned.

(iv) *The Madhavakara Period, 700 A. D.*—After another lapse of a century Madhavakara, explained in his inimitable way the symptomatology of eye-diseases in a 14th *Shalakya-Tantra.* He followed Sushruta almost entirely, and ignored Vagbhata. He retained the 77 diseases of Sushruta, and added only one more *Kunchana* which is the same as *Krichhron-milana* of Vagbhata. He notes some more symptoms and makes diagnosis easier.

Shrikantha-dutta (1300 A. D.), Madhavakara's commentator and an equally brilliant writer, lays under contribution many of the above thirteen *Shalakya-Tantras*, and gives quotations from the commentaries of Gadadhara, Kartika-Kundu, and Ravi-Gupta (725 A. D.). He himself must have been a good *Madhuvidya-Visharada*, as he adds a few symptoms here and there from his own observations.

The commentators Chakrapani-dutta, Kashirama, Vachaspati, and Bhava-Mishra add nothing new to the subject. All progress in Ophthalmology seems to have stopped with Shrikantha-dutta ! Worse still, all *Shalakya-Tantra* except those of Sushruta, Vagbhata, and Madhavakara, were allowed to be lost to posterity !!

PRESENT POSITION.—Another renaissance is almost over-due !!! Ophthalmology has been a

neglected subject with the Ayurvedists ever since the thirteenth century when Shrikantha-dutta propounded the subject in his Madhukosha. The medical treatment of eye-diseases has been ignored, and the surgical treatment has passed out almost entirely into the hands of illiterate quacks. India at present shares with China and Egypt the doubtful privilege of having the largest number of blind in the world. Much of this blindness is due to preventible causes and can be remedied by propaganda and by education of the public in hygiene. Such education was common enough up to the 1st century and used to be engraved on stone pillars in the Market-square for any passer-by to take a note of. Vrinda-Madhava mentions that Sidha-Nagarjuna had one such pillar planted in Patna to advertise a remedy for a common eye-trouble.

The duty of the profession does not end here ; once the disease has declared itself they have to take steps to alleviate suffering, and incidentally further the Science of Ophthalmology.

The Object of the Paper.—The therapeutic armamentarium of the Ayurvedist is indeed vast. 173 formulae necessitating the employment of 228 drugs have been described by Sushruta ; Vagbhata describes 154 prescriptions requiring 204 drugs ; Vrinda-Madhava gives 121 prescriptions requiring 187 drugs. When other systems of the Practice of Ophthalmology are seen to carry out their work most efficiently with less than thirty drugs, one may justifiably question the necessity of retaining the large number of drugs and prescriptions which an Ayurvedist is expected to make use of. For some of us with a Western medical training, the data of eye-diseases mentioned in Ayurveda have to be interpreted first in terms of Western Ophthalmology before any attempt at investigation or correct application of drugs and their formulae is made. It is with this view that an endeavour has been made in this paper to find out the Western equivalents of Ayurvedic eye-diseases which would facilitate the selection and employment of correct drugs and treatments.

Method of Collecting the Data.—Sushruta's *Shalakya-Tantra* has been taken in this paper as a basis, on account of both priority and excellence. The aetiology of the disease based on *Tridosha* theory, its location, mode of action and its progress with reference to Sushruta's anatomy of the eye, its prognosis, and the nature of the surgical aid when necessary, are examined in detail. Any variations, additions, explanations, &c., found in the works of other authors of subsequent centuries are given separately under the same disease, and the authority is quoted. Repetition of the same idea from different authors has been avoided. The evidence thus accumulated is sometimes conflicting, rarely meaningless ; but often, it is illuminating enough to render the word-picture of a disease more distinct.

Anatomy of the Eye.—Sushruta is the only one who describes the anatomy of the eye ; the rest are quite content with his description and have made no attempts at any further investigations. If any chapter in *Sushruta-Samhita* has to be considered badly redacted by the commentators, the chapter on Anatomy of the Eye would easily stand first as a good illustration. The commentators find it difficult to understand the description of the "Four *Patala*" ; once, in the Anatomy chapter with reference to coverings of the eye ; and again in the chapter on Diseases of *Drishti* with reference to the description of the four stages of *Timira* (*i. e.*, indistinct vision).

The dimension and shape of the eye given by Sushruta are inaccurate. His description and measurements evidently refer to the superficial parts and not to the deeper parts of the eye. Almost all the diseases of which he gives physical signs and symptoms have reference likewise to the superficial anatomy of the eye.

Of the five *Mandala*, the *Shweta*, *Krishna* and *Drishti Mandala* refer to the sclerotic covered by the conjunctiva, the cornea, and the pupil respectively, and might mean the whole sclerotic, the choroid, and the retina respectively also from without inwards.

The four *Patala* (coverings) in the Anatomy chapter refer from the front or outside to the

deeper, innermost or hindmost part, and are (1) the eye-ball (consisting of light and water) supported by (2) the muscular and (3) the fatty layer in (4) the bony eye-socket of the skull. Each of the *Patala* has a peculiar symptom-complex assigned to it, and the *Dosha*, according to Videha become more and more aggressive as they pass from the fourth to the first *Patala*. If Western Anatomy is to be a guide, Sushruta's word *Patala* in the *Drishti* chapter must be taken metaphorically to mean the various stages of a disease, as the symptom-complex refer to progressive lesions of the eye, *e. g.*, the cornea, iris, choroid, lens, vitreous, retina, &c.

THE NUMBER OF EYE-DISEASES.—It will be seen from the Index of Diseases, that 185 synonyms are current as names of eye-diseases; while 23 of these are but variations of one another; there are indeed 80 new synonyms which occasion much confusion in the identification of diseases. The number of diseases vary with different authors; new diseases are introduced, and old ones are dropped; the descriptions of symptoms are often short and incomplete and sometimes conflicting. The commentators have facilitated the task by giving a few cross references: but these are not exhaustive. After collecting all the data from the literature, and arranging the same, it is possible to state that there ought not to be more than 82 eye-diseases, 77 of which are those mentioned by Sushruta, the rest being new discoveries of Vagbhata.

IDENTIFICATION OF EYE-DISEASES.—The aetiology of eye-diseases in the Eastern and Western Systems of medicine is so dissimilar as to render this information useless for identification. Out of 82 eye-diseases, 64 can be definitely identified from other data, 38 of which are but different phases of a much smaller number of diseases, *viz.*,—11

The descriptions of the symptoms of 15 eye-diseases are so incomplete and vague, that the descriptions may apply to several pathological conditions. As many as 14 of these doubtful identifications occur in Diseases of the Eyelid alone. Here, the descriptions are complete so far as the condition of the eyelids is concerned; but many of these symptoms are so advanced, and acute, that it is impossible to believe them to be primary and not accompanied by still graver symptoms and lesions of other vital parts of the eye, *e.g.*, cornea, iris, choroid, retina, &c. The Ayurvedic method of examination appears here to have been too casual to justify for their diagnosis a place in the chapter of diseases. Various equivalent Western names of diseases are suggested in this paper, but the list is certainly not exhaustive.

The above applies still more appropriately to the identification of the numerous symptoms under *Timira* (indistinct vision). What laxity in accurate and complete description of symptoms seems unpardonable where eyelids were concerned, can well be excused in the Diagnosis of *Timira*. Instrumental aids for examination of the interior of the eye and measuring the pathological damage were unknown. Here again, various diseases of the lens, choroid, retina, optic nerve &c., have been suggested as equivalent names.

Three eye-diseases defy even the vaguest identification.

On the whole almost all the common eye-diseases and a good many of the rare ones appear to have been recognised by the Ayurdists. The descriptions of subjective symptoms and objective signs are remarkable for their clarity and appropriateness, and are the best that could be expected from their limited knowledge of anatomy and the help of an unaided eye.

THE DATA.

In subsequent descriptions the following abbreviations are used for the authors' names:—Adhamal=Ad.; Bhava-Misra=Bh.; Chakrapani-dutta=Chak.; Charaka=Ch.; Dallana=Da.; Karala=Ka.; Kartika=Kart.; Madhavakara=Ma.; Nimi=Ni.; Satyaki=Sa.; Sharangdhara=Sha.; Shrikantha-dutta=Kan.; Sushruta=Su.; Vagbhata=Va.; Videha=Vi.; Vrinda=Vr.

Gross Anatomy of the Eye and its Appendages.

The eye-ball is two fingers broad, a thumb's width deep, and two and a half fingers in circumference. It is almost round in shape and resembles the teat of a cow. It is made up of five *Mandala* or circles, six *Sandhi* or joints between the various *Mandala*, and six *Patala* or coverings.

The *Mandala* are :—1. *Pakshma* (the circle of the eye-lashes); 2. *Vartma* (the circle of the eyelids); 3. *Shveta* (the white circle or sclerotic); 4. *Krishna* (the black circle or the region of the cornea, and may imply the choroid, iris and ciliary body &c.); and 5. *Drishti* (the circle of the pupil and may imply the anterior chamber, the lens and its appendages, the vitreous, the retina, and the optic nerve). The circles are so arranged that the one preceding lies within the next one in the list. Nakula explains this idea better; the first two cover the next four *Mandala*.

The *Krishna-Mandala* (cornea) forms one-third part of the whole eye, while the *Drishti-Mandala* (circle of the pupil) forms one-seventh part of the *Krishna-Mandala*.

In the pupillary area is to be found a natural hole which gives access to the interior of the eye (*e.g.*, to the lens).

The *Sandhi* or (lines of demarcation of the circles) are :—1. *Pakshma-Vartma* (between eye-lashes and eye-lids); 2. *Vartma-Shveta* (the fornices); 3. *Shveta-Krishna* (the limbus); 4. *Krishna-Drishti* (the margin of the pupil); 5. *Kaninika* (the inner canthus); 6. *Apanga* (the outer canthus).

The *Patala* :—Two of the coverings are in the *Vartma-Mandala*, the eyelids region, *i.e.*, the skin (?) and the palpebral conjunctiva (?). Four are in the eye proper in which the dreadful disease *Timira* (impairment of vision) occurs; still continuing the description from the front, the foremost (or external) covering supports the 'light' and 'water' elements of the eye; the second behind it is made up of the muscles (motive muscles outside the eye); the third is made up of fat (the fatty layer around the eye-ball); and the fourth (the deepest or innermost) is of bone (the receptacle in the skull for the eye-ball).

The different parts of the eye-ball are held together by blood-vessels, muscles, fat (the vitreous?) and a black substance (choroid?). Beyond the choroid there is a mass of whitish substance, through which course the blood-vessels.

Subtle Anatomy of the Eye.

The eye is made up of all the (five) elements of which the universe is built up. The element of the Earth contributes to the formation of muscles; the element of Heat, to that of blood; the element of the Wind (*Vayu*), to that of the black part of the eye; the element of Water, to that of the white part (sclerotic, &c.); and the element of the Ethereal Void contributes to the formation of lacrymal paths (glands, sac, and duct) through which the tears are discharged.

Anatomists say that *Drishti* is the quintessence of the five elements; that of Eternal Light plays a dominant role, and neither increases nor decreases in the eye. It is thus, from the very nature of its constitution, accustomed to cold. It is covered by the outer coverings of the eye. It looks like a hole which is equal in size to half the seed of *Ervum lens*, or a pulse. The flash of the pupil resembles the phosphorescent flash of a glow-worm or that of a minute particle of fire, which neither burns itself nor burns others.

There are two *Marma* near the eye :—1. the *Apanga* at the outer end of the eyebrow, and 2. *Avarta* above the middle of the eyebrow; if these are cut, loss of eye-sight results (Va).

In each of the feet, there is a big blood-vessel which goes very likely straight up to the eye of the same side; medications applied to the soles of the feet are carried to the eye by these channels (Va.).

Aetiology of Eye-Diseases.

The derangement or aggravation of the *Dosha* passes upward to the region of the eyes through the up-coursing veins and provoke there a good many dreadful diseases. This derangement may be caused by: (1) diving in water immediately after exposure to the heat and glare of the sun; (2) looking at distant objects; (3) sleeping during the day and waking at night; (4) fixed and steady gaze; (5) excessive weeping; (6) over-indulgence in anger, grief; (7) worry; (8) injury; (9) sexual excess; (10) taking excess of alcoholic drinks, fermented rice water, acid gruel, *Phaseolus radiata* and *Dolichos biflorus* pulses; (11) repression of calls of nature; (12) exposure of eyes to smoke or dust; (13) trickling of sweat into the eyes; (14) excessive vomiting; (15) repression of tears; (16) constant contraction of the eyes to view small objects.

Symptomatology (in general) of Eye-Diseases.

Cloudiness of vision, slight inflammation, lachrymation, accumulation of secretion, heaviness and burning sensation, sucking or aching pain, redness of the eyes are indistinctly evident as premonitory symptoms.

In inflammation of the eyelids the eye seems as if studded with the bristles of Shuka (?) worms; there is much pain, impairment of vision in detecting colours or form, and difficulty of opening and closing the eyelids.

The symptoms of convalescence from eye disease are: dimminution of pain, itching and swelling, clearing of the eyes and stopping of lachrymation. These indicate that the *Dosha* have ripened well (Ma.).

Treatment (in general) of Eye-Diseases.

A physician should conclude from these symptoms that the eyes are affected by *Dosha;* suitable remedies should be administered, otherwise the disease might become too serious. The maxim is to prescribe a general treatment for the different *Dosha* in the body before the *Dosha* in the eye region are treated. The special remedial measures for *Vata, Kapha,* &c., have been described elsewhere in detail.

Number of Eye-Diseases.

Seventy-six diseases (Su.) are met with: ten are due to *Vata-Dosha;* ten due to *Pitta-Dosha;* thirteen due to *Kapha-Dosha;* sixteen due to *Rakta-Dosha* (vitiated blood); twenty-five are caused by the united action of the three *Dosha*, i.e., *Sannipata;* and two are due to external causes (visible or invisible injury). Sushruta adds *Kukunaka* as the 77th.

Different editions of Charaka give 96 and 76 as the number of eye-diseases. Videha, Karala and Kaushitaka are said to describe 76, 96 and 80 diseases respectively (Cha.). Vagbhata and Sharangdhara describe 94; Madhava describes 76. But none of them stick to this number and often add 1 or 2 to the list.

Location of Eye-Diseases.

Of the 76 types of eye-diseases, 9 are confined to the *Sandhi*, 21 to the eyelids, 11 to the sclerotic, 4 to the cornea, 17 to the entire eye-ball, 12 to *Drishti* (pupil, lens, &c.); 2 though referring to *Drishti* are due to external causes and are very painful and incurable (Su.).

Vagbhata and Sharangdhara describe 94 diseases and add one more, *Pilla;* 9 are confined to *Sandhi*, 22 to eye-lids, 2 to eye-lashes, 13 to sclerotic, 5 to cornea, 16 to entire eye-ball, and 27 to *Drishti*.

Chakrapanidutta in explanation of what Charaka meant by "few diseases", says that Charaka considered diseases of the four regions (Sclerotic, Cornea, *Drishti* and the whole Eye) as important; and the rest, those of the eye-lid and its appendages as unimportant. He further quotes

"13 diseases arise in the Sclerotic, 6 in the Cornea, 25 in the Vision region and 16 in the whole eye".

The arrangement and order of diseases and their assignment to particular regions, adopted in this paper is with reference to their relative affinities and specific symptoms. According to this classification, the total number of diseases is 82; 9 are confined to *Sandhi*, 2 to eye-lashes, 22 to eye-lids, 17 to the entire eye-ball, 11 to sclerotic, 5 to cornea, and 16 to *Drishti*.

Classification of Eye-Diseases.

The diagnosis according to Western conception is given in brackets and represents the nearest Western equivalent for the terminology of the Ayurvedist. Where the word-picture is indefinite, and one or more diseases are indicated, an interrogation mark is put in.

(I would like to express here my sincere thanks to Dr. D. D. Sathaye, F.R.C.P. & S. (Glasgow), Ophthalmic Surgeon, Bombay, for the help he rendered me in the identification of many of the following eye-diseases).

A. DISEASES OF THE EYE-JOINTS.

1.b	Jala-srava . ..	Acute Dacryocystitis.	5	Puyalasa	Suppurative Dacryocystitis.
1	Pitta-srava . ..	Chronic ,,	6	Parvani	Phlyctennlar conjunctivitis.
2	Rakta-srava	Acute ,,	7	Alaji	Plyctenules at the Limbus.
3	Kapha-srava	Chronic ,,	8	Krimi-granthi	Blepharitis acarica.
4	Puya-srava	,, Dacryocystitis with stenosis of Lachrymo-nasal Duct.	9	Upanaha	?

B. DISEASES OF THE REGION OF THE EYE-LASHES.

10	Pakshma-kopa	Trichiasis, Distichiasis.	11	Pakshma-shata	Blepharitis marginalis.

C. DISEASES OF THE EYE-LID.

12	Nimesha	Chronic Blepharospasm.	23	Vartmasharkara	Herpes Ophthalmicus ?
13	Vatahata-Vartma ..	Ptosis, (third nerve paralysis).	24	Bahala-Vartma	Molluscum Contagiosum ?
14	Kukunaka	Acute Blenorrhoea ?	25	Klinna-Vartma	Pseudo-membranous or Diphtheritic conjunctivitis.
15	Arbuda	Cyst, Polypus, Fatty tumour.	26	Vartma-bandha	Oedema of the eye-lid.
16	Pothaki	Trachoma.	27	Klishta-Vartma	Erysipelas ? Cellulitis ?
17	Anjana	Hordeolum—acute.	28	Vartma-kardama	Erysipelas ? Cellulitis ?
18	Utsangini	,, suppurative.	29	Shyava-Vartma	Purulent conjunctivitis ?
19	Kumbhika	,, secondary.	30	Arsho-Vartma	?
20	Lagana	Chalazion.	31	Shonitarsha	Telangiectases ? Sarcoma ?
21	Bisa-Vartma	Hordeolum internum ?	32	Shushkarsha	Veruca Vulgaris ?
22	Aklinna-Vartma ..	Blepharitis.	33	Krichhronmilana	Secondary to Keratitis, Iritis &c.

D. DISEASES OF THE WHOLE EYE-BALL.

34	Shushka-Akshipaka ..	Ophthalmoplegia ?	42	Vatadhimantha ..	Acute Orbital Cellulitis—1st stage.
35	Anyato-Vata	Neuralgia of 5th nerve.	43	Kaphadhimantha ..	,, ,, 2nd stage
36	Vata-paryaya	,, ,,	44	Sira-harsha	,, ,, 3rd stage
37	Vata-bhishyanda ..	Conjunctivitis catarrhal.	45	Raktadhimantha ..	,, ,, ,,
38	Kapha-bhishyanda ..	,, ,,	46	Pittadhimantha	,, ,, 4th stage
39	Sirotpata	,, ,,	47	Sashopha-netrapaka ..	Panophthalmitis.
40	Rakta-bhishyanda ..	,, ,,	48	Ashopha-netrapaka ..	Phthisis bulbi.
41	Pitta-bhishyanda ..	,, mucopurulent	49	Hatadhimantha ..	Phlegmonous Orbital Cellulitis.
			50	Pilla	Chronic Conjunctivitis.

E. DISEASES OF THE SCLEROTIC.

51	Shuklarma	Pingueculum.	57	Sira-pidika	Scleritis.
52	Prastaryarma	Pterygium.	58	Pishtaka	Scleral nodules.
53	Snayvarma	,,	59	Balasa	Scleritis.
54	Lohitarma	,,	60	Shuktika	Xerophthalmia.
55	Adhimansarma	,,	61	Arjuna	Subconjunctival Ecchymosis.
56	Sirajala	Pannus.			

F. DISEASES OF THE CORNEAL REGION.

62	Sira-Shukra	Keratitis Acute.	65	Akshi-pakatyaya ..	Hypopyon Ulcer.
63	Sa-vrana-Shukra ..	,, Purulent (corneal ulcer).	66	Ajaka	Anterior Staphyloma.
64	A-vrana-Shukra ..	Nebulae, Maculae.			

G. DISEASES OF THE VISION REGION.

67	Nakulandhya	Erythropsia.	75	Parimlayi-Linganasha ..	Glaucoma?
68	Shleshma-Vidagdha-Drishti	Nyctalopia.	76	Kaphaja-Linganasha ..	White Cataract.
69	Ushna-Vidagdha-Drishti	„	77	Vataja-Linganasha ..	Uveitis?
70	Pitta-Vidagdha-Drishti ..	Hemeralopia.	78	Raktaja-Linganasha ..	Acute Intra-Ocular Haemorrhage.
71	Hrasva-jadya	„	79	Sannipataja-Linganasha	Chronic Intra-Ocular Haemorrhage.
72	Dhuma-Drishti	Glaucoma?	80	Sa-nimitta-Linganasha ..	Photo-retinitis.
73	Amla-dhyushita-Drishti ..	„	81	A-nimitta-Linganasha ..	Optic Atrophy.
74	Pittaja-Linganasha ..	„	82	Gambhirica	6th Nerve Paralysis.

A. Diseases of the Eye-Joints (9).

1.a. *Srava.* Syn.-*Netra-nadi.*

A painless fluid discharge from any of the four *Sandhi*. It is due to the passage of a *Dosha* through the lachrymal apparatus into the four (?) *Sandhi* of the eye; *Vata-Dosha* causes no discharge but a dry sensation. All *Srava* are incurable.

Sushruta is indefinite as regards the Sandhi where these discharges occur. Videha limits these discharges only to *Kaninika* or inner canthus.

1.b. *Jala-Srava.*

The discharge is watery and flows from the inner canthus; the eye is painful, red and inflamed; this is due to *Vata-Dosha* alone (Va.). This disease should be considered the same as *Pitta-Srava* because of the watery discharge (Ad.).

(Acute Dacryocystitis).

1. *Pitta-Srava.* Syn.-*Jala-Srava.*

The discharge is from the central part of the joint, is warm, watery, yellowish or bluish; it is due to *Pitta-Dosha.*

(Chronic Dacryocystitis).

2. *Rakta-Srava.*

Thin, warm, copious, blood-stained discharge; it is due to *Rakta-Dosha.* There is a blood-tinged purulent discharge (Ad.).

(Acute Dacryocystitis).

3. *Kapha-Srava.* Syn.-*Sleshma-Srava.*

Slimy thick, muco-purulent, painless discharge due to *Kapha-Dosha.*

(Chronic Dacryocystitis).

4. *Puya-Srava.* Syn.-*Sannipata-Srava.*

Multicoloured purulent discharge due to *Sannipata-Dosha.* It comes out repeatedly from the inner canthus (Va.).

(Chronic Dacryocystitis with obstruction or stenosis of the Lachrymo-nasal Duct).

5. *Puyalasa.*

A suppurating swelling at the inner canthus exuding dense foetid pus. The swelling is painful, and comes on repeatedly (Va., Vi., Ni., Ma.). It is due to *Sannipata-Dosha* and is curable; venesection is advisable and should be followed by poullticing. See *Alaji* (Va.).

(Suppurative Dacryocystitis).

6. *Parvani.* Syn.-*Parvanica.*

A small copper-coloured swelling at the sclero-corneal junction; there is a burning sensation and pain; it is due to *Rakta-Dosha* and is curable. It is sprout like; there are yellowish hot tears due to all *Dosha* (Vi.). It is smaller in size than *Alaji* and is incurable (Da.). There is bloody discharge, and a swelling in the fornix (Va.). It should be **excised.**

(Phlyctenular Conjunctivitis; or Single Follicular Conjunctivitis (?) according to Vagbhata).

7. ***Alaji.***

A small copper-coloured swelling at the Limbus causing burning sensation and pain. It is shaped like a cow's teat and there is flow of tears (Vi.). It is larger than *Parvani* (Da.). It is due to *Sannipata-Dosha* and is incurable.

Vagbhata describes two diseases under the same name, viz., *Alaji,* whose symptoms correspond somewhat to those of *Puyalasa,* but are quite distinct from those of *Alaji* of Sushruta :—

(*a*) A swelling at the inner canthus attended with pain, pricking, and burning sensation (Va.).

(*b*) A hard raised inflammed swelling on the outside of the eye-lid near the inner canthus; it suppurates, discharges pus and blood, and swells repeatedly (Va.).

Adhamal tries to reconcile these views; but the 2nd *Alaji* of Vagbhata looks like *Puyalasa.*

(Phlyctenules at the Limbus).

8. *Krimi-granthi.* Syn.-*Jantu-granthi.*

A swelling at the root of the eye-lashes caused by parasites which wander to the fornix and cause inflamma-

tion of the eye and itching. Swellings also occur in the fornix, which secrete a purulent discharge; in addition to local insects other outside insects may find entry into the fornix (Vi.).

It occurs at both corners of the eye, has a purulent discharge, pain, and burning sensation; insects are found, and eye-lashes fall (Va.).

It is due to *Kapha-Dosha* (Su.); or to *Sannipata-Dosha* (Vi.). It is curable and should be incised.

(Blepharitis acarica, due to Pediculi pubis, Demodex follicularum, and Pediculis capitis).

9. *Upanaha.* Syn.-*Shleshmopanaha* (Vi.).

A painless swelling at the junction of the pupil and cornea; it is of considerable size and is accompanied by itching; there is no suppuration. It is a pointed crystal-like swelling broad at the base (Va.). A reddish, hard, slightly painful swelling at the pupil and cornea junction; it is called *Shleshmopanaha* because *Vata* brings *Kapha* to that place (Vi.). Adhamal agrees with Videha's view.

It is due to *Kapha-Dosha* and should be incised.

(?)

B. Diseases of the Region of the Eye-Lashes (2).

10. *Pakshma-Kopa.* Syn.-*Upa-pakshma-mala, Parivala,* (Su.), *Pakshmop-rodha* (Ma.), *Pakshma-prakopa* (ad.), *Pittot-klishta* (Va.).

The eye-lashes become rough and sharp-pointed, and cause pain; the eye cannot bear wind, heat, and glare of light. The eye-lids contract, the eye-lashes point inwards and other new eye-lashes grow inside (Va.). The eye-lashes fall off; the disease is due to *Vata Dosha* and is a terrible one (Ma.)

It is due to *Sannipata-Dosha,* and may get cured; there is temporary relief when the offending eye-lashes are pulled off; but they grow again; an operation for everting the eye-lashes is mentioned (Su.).

Vagbhata describes a disease *Pittot-klishta* which Adhamalla says is the same as *Pakshma-prakopa.* The eye-lid is inflamed, sensitive to touch; there is burning sensation, discharge and pain (Va.).

(Trichiasis; Distichiasis).

11. *Pakshma-shata.* Syn.-*Pakshma-ghata* (Sha.).

The falling of eye-lashes is attended by itching and burning sensation; it is due to *Pitta-Dosha* (Va., Ma.).

(Blepharitis marginalis).

C. Diseases of the Eye-lid (22).

12. *Nimesha.* Syn.-*Nimisha, Nimeshani.*

Constant opening and closing of lids. It is a painless complaint (Va.). It is due to incarceration of *Vata-Dosha* in the eye-lid and is incurable.

(Clonic or Fibrillary Blepharospasm, due to Habit Chorea, Hysteria, &c.).

13. *Vatahata-Vartma.* Syn.-*Utklishta-Vartma* (Va.).

A drooping of the eye-lid which seems dislocated and may or may not be painful. It is due to *Vata-Dosha* and is *incurable.* Adhamalla says *Utklishta-Vartma* of Vagbhata is the same as *Vatahata-Vartma;* the eye-lid is excited repeatedly, and is languid in the intervals by itself; it is due to *Rakta* and *Sannipata-Dosha* (Va.).

(Ptosis, partial third nerve paralysis).

14. *Kukunaka.*

A peculiar disease of the eye-lids of infants; there is excessive itching, constant lachrymation, and photophobia; the child rubs its eyes, nose, forehead, &c. Vitiated condition of mother's milk may bring it on. It occurs at teething time; the eyes are red and inflamed; the eye-lids are painful and stick to each other (Va.). It is due to *Sannipata* and *Rakta-Dosha* and is curable. Venesection and scarification are advisable.

(Acute Blenorrhoea of the New-born; Ulcerative Blepharitis).

15. *Arbuda.* Syn.-*Vartmarbuda* (Va.).

A red, hard, painless, uneven, pendulous swelling on the inner side of the eyelid, and growing rapidly; it is due to *Sannipata-Dosha* and is curable; it should be excised. It is a fleshy swelling (Va.).

It does not ripen nor suppurate even when there is *Kapha-Dosha* (Kau.).

(Cyst, Polypus, Fatty Tumour of the interior of the eyelid).

16. *Pothaki.*

A number of hard, red, mustard-like boils, causing pain, itching, and discharge. There is also swelling and sticking of the eyelids (Va.). They are due to *Kapha-Dosha,* are curable, and should be gently scarified.

(Granular Conjunctivitis).

17. *Anjana.* Syn.-*Anjana-namika.*

A small soft copper-coloured pustule on the eye-lid accompanied by burning and pricking sensation, and some pain. There is itching as well (Va.). It is due to *Rakta-Dosha,* is curable, and should be incised.

(Hordeolum, acute inflammation of Meibomian gland).

18. *Utsangini.* Syn.-*Utsanga; Pakshmotsanga* (Ad.). Utsangapidika (Vi.).

A boil on the outer side of the lower lid pointing inward. It causes constant pain, and is due to parasites; when cut, it has a discharge like the contents of a hen's egg (Vi.). It is copper-coloured (Ma.).

It is due to *Sannipata-Dosha,* is curable and should be scarified after excision. It is due to *Rakta-Dosa,* and similar boils crop up around it (Va.).

(Hordeolum, suppurative inflammaton of Zeis's gland).

19. *Kumbhika.* Syn.-*Kumbhikini, Kumbhi.*

A number of boils of the size of *Myrica nigra* seeds at the junction of the eye-lid and eye-lashes, and causing much inflammation after bursting. They recur (Vi., Va.).

They are due to *Sannipata-Dosha,* are curable and should be scarified after deep incision. They are due to *Pitta-Dosha* and are blackish in colour (Va.).

(Secondary Styes).

20. *Lagana.* Syn.-*Nagana* (Sat.), *Alagana* (Ad.).

A thick, whitish, hard, painless, nodular swelling of the eye-lid; it is of the size of *Ziziphus jujuba* fruit, has marked itching sensation, and does not suppurate. There is some pain (Sat.). It is due to *Kapha-Dosha,* is incurable, and should be incised.

(Chalazion).

21. *Bisa-Vartna.* Syn.-*Visa-Vartma.*

An inflammatory swelling of the eyelid which is dotted with minute holes, like the pores in the stem of a lotus plant. The holes are on the inside of the eye-lid (Ka.). There is a discharge (Va.).

It is due to *Sannipata-Dosha,* is curable and should be incised.

(Hordeolum internum).

22. *Aklinna-Vartma.* Syn.-*Pariklinna-Vartma, Shlishta-Vartma* (Va.)., *Apariklinna-Vartma* (Ka.).

A sticking together of the eyelids even though suppuration be absent and the part is frequently washed. In *Shlishta-Vartma* the eyelids come so close as to stick together; there is itching, swelling, and redness (Va., Ad.). It is an affection of both eyes (Kart.).

It is due to *Sannipata-Dosha* and is curable. No operation is required. It is an affection of both eyes (Ka.).

(Blepharitis).

23. *Vartma-sharkara.* Syn.-*Sharkara-Vartma, Sharkara. Sikata-Vartma* (Va.), *Vartma-Karkarika* (Vi.).

A rough, large, pustule on the eye-lid, surrounded by other very small hard reddish pustules. They are due to

Sannipata-Dosha, are curable, and should be scarified after deep incision. The pustules are like grains of sand (Va.).

(Herpes Ophthalmicus ?)

24. *Bahala-Vartma.* Syn.-*Bahula-Vartma* (Ma.).

Numerous pustules of equal size occurring all over the eyelid and alike in colour. They are due to *Sannipata-Dosha,* are curable, and should be scarified gently.

(Molluscum contagiosum ?).

25. *Klinna-Vartma.* Syn.-*Praklinna-Vartma* (Ka.), *Kaphotklishta* (Va.).

An external swelling of the eyelid, with a deposit of mucous on the inner surface, and accompanied by some pain, discharge, itching, and much pricking sensation. The eyelid is stiff (Va.). Vagbhata's *Kaphotklishta* is the same as *Praklinna-Vartma* (Ad.).

It is due to *Kapha-Dosha,* is curable, and no operation is required. It can be called a *Pilla* and is due to *Sannipata-Dosha* (Vi.).

(Pseudo-membranous or Diphtheritic Conjunctivitis ?).

26. *Vartma-bandha.* Syn.-*Baddha-Vartma.*

A swelling of the eyelid which interferes with its movements or opening; there is itching sensation and slight pain. It is due to *Sannipata-Dosha,* is curable, and should be scarified gently.

(Oedema of the Eyelid, Secondary to other diseases of the eye).

27. *Klishta-Vartma.*

A mild copper-coloured swelling of both the lids simultaneously, attended with a slight pain and suddenly becoming red. There is much pain (Kan.). A painful fleshy growth on the eyelid like *Pentaptes phoenicia* fruit (Vi.).

It is due to *Rakta-Dosha,* is curable and should be scarified gently.

(Erysipelas ? Cellulitis ? Panophthalmitis ?).

28. *Vartma-Kardama.* Syn.-*Kardama-Vartma.*

This is an advanced stage of *Klishta-Vartma* and is due to *Pitta-Dosha;* there is much dirty discharge and the eyelid is sodden in appearance. Dark and muddy (Va.).

There is thus *Sannipata-Dosha;* but it is curable, and should be scarified neither deep nor superficially.

(Erysipelas ? Cellulitis ? Panophthalmitis ?).

29. *Shyava-Vartma.*

An inflammation of the inside and outside of the eyelid; it is of a dark-brown colour; there is purulent discharge with burning and itching sensation, and severe pain. The swelling looks as if burnt by fire (Vi., Ni).

It is due to *Sannipata-Dosha,* is curable, and should be scarified neither deep nor superficially.

(Purulent Conjunctivitis ?).

30. *Arsho-Vartma.* Syn.-*Pakshmarsha* (Ad.).

Small rough papillae on the eyelid like *Cucumis utilissimus* seeds, and attended with constant pain. They also occur in the eye-lashes region, inside or outside (Ni.).

They are due to *Sannipata-Dosha,* are curable, and should be excised.

(?)

31. *Shonitarsha.* Syn.-*Arsha* (Va.), *Raktarsha* (Ka.), *Raktotklishta* (Va.).

Soft fleshy growths on the eyelid accompanied by pain, itching and burning sensation; they recur after removal. They bleed and grow again, when cut (Va.). *Vayu* carries blood to the blood-vessels and forms sprout like growths (Vi.). Vagbhata's *Raktotklishta* is the same as *Shonitarsha* (Ad.); there are prominent blood vessels and the eyelid is sensitive to touch.

They are due to *Sannipata-Dosha* and are incurable.

(Telangiectases; Sarcoma ?).

32. *Shushkarsha.*

Long, rough, hard, and very painful papillae on the eye-lid. They are on the inner side of the eye-lid (Vi., Ma.).

They are due to *Sannipata-Dosha,* are curable, and should be excised.

(Veruca vulgaris ? Fibroma of the Eyelid ?).

33. *Krichhonmilana* (Va.). Syn.-*Kunchana* (Ma.).

The eyelids are stiff on getting up in the morning; there is pain in the eye, gritty sensation, laohrymation, and difficulty of opening the eyes; all this disappears after rubbing the eyes for some time. The eye remains continually closed on account of impurities, and the eye cannot see (Ma.).

It is due to *Vata-Dosha* (Va.); or to *Sannipata-Dosha* (Ma.). Karal's description of Shushka-Akshipaka (34) reads like Vagbhat's *Krichonmilana.*

(Ophthalmoplegia ? Secondary to Keratitis or Iritis ?)

D. Diseases of the whole Eye (17).

34. *Shushka-Akshipaka.*

A dry and hardened condition of the eyelids which are difficult to open and always remain closed; the vision is cloudy and hazy. There is gritty sensation in the eye, stickiness of the eyelids, severe pain, and suppuration; the eye contracts and feels dry; cold applications are welcome (Va.). The nose is also involved (Ad.).

It is due to *Vata-Dosha* and is curable; no operation is requred. It is also due to *Pitta-Dosha* (Va.), or to *Rakta-Dosha* (Karal).

(Ophthalmoplegia ? Recurrent attacks of Erysipelas ?).

35. *Anyato-Vata.* Syn.-*Anya-Maruta.*

There is excessive pain in the eyes or in the eyebrows. There is no stickiness of the eyelids, nor redness, nor swelling; the eye contracts and there is lachrymation (Va.). There is pain in the temples as well (Vi.).

It is due to *Vata-Dosha* of the head, ears, cheek-bones, back of the neck, the 'Manya' nerves of the neck, or any other part of the body adjacent to the eye; it is curable, and venesection should be done.

(Neuralgia of the 5th nerve).

36. *Vata-paryaya.* Syn.-*Maruta-paryaya, Spanda-Maruta, Anila-viparyaya* (Su.), *Vata-viparyaya* (Va.).

A shifting pain, sometimes in the region of the eye-lashes or in the eyebrows, or in the eye. The disease is just like *Anyato-Vata;* the eye is also twisted and swollen (Va.). There are various severe pains (Ma.).

It is due to *Vata-Dosha* and is curable; venesection should be done.

(Neuralgia of the 5th nerve. Paralytic strabismus due to 4th or 6th nerve).

37a. *Abhishyanda* and *Adhimantha.*

All the diseases that refer to the whole eye may result from *Abhishyanda* of which there are four forms. If these are neglected and not remedied at the outset, they may end into the respective forms of *Adhimantha.* There is now excruciating pain in the eye which feels as if it is torn out; and a crushing pain which extends upwards and causes hemicrania. There are noises in ears and giddiness, pain in the temples, teeth, cheek, and forehead (Va.).

If the *Adhimantha* are neglected, blindness may come on within seven days in *Kaphadhimantha,* within six days in *Vatadhimantha,* within five days in *Raktadhimantha,* and instantaneously or in three days, in *Pittadhimantha. Sashopha-netrapaka* is the final result. *Hatadhimantha* also follows *Vatadhimantha.*

(1. Conjunctivitis; 2. Acute Orbital Cellulitis; 3. Panophthalmitis).

37. *Vatabhishyanda.*

An inflammation of the eyes, accompanied by pricking pain, numbness, rough and dry feeling in the conjunctiva, cold tears, headache, and horripilation.

The nose is inflamed and swollen; there is pricking, throbbing and bursting sensation in the eyes, eye-brows, temples, and forehead; shifting pains, difficulty in opening and closing the eyelids; a feeling of insects creeping in the eye; eyes feel swollen and as if filled with sharp substances; hot oily fomentations give relief (Va.).

It is due to *Vata-Dosha*, and is curable; venesection should be done.

(Simple Hyperaemia of the Conjunctiva; Catarrhal Conjunctivitis).

38. *Kaphabhishyanda.*

A swelling of all parts of the eye with extreme whiteness, a constant deposit and discharge of slimy mucous, and accompanied by heaviness and itching; fomentations are agreeable. There is sleepy feeling, loss of appetite, and discharge of thick, oily, abundant, whitish muco-pus and lachrymation (Va.). The eyes feel cold (Ma.).

It is due to *Kapha-Dosha* and is curable; venesection is advisable.

(Simple Acute or Catarrhal Conjunctivitis).

39. *Sirotpata.* Syn.-*Shirotpata.*

An affection of the whole eye where all the blood vessels become copper-coloured, or discoloured; there may be pain; if neglected it leads to *Shira-harsha.*

The sclerotic and conjunctiva is affected; there is inflammation, lachrymation and sticking of eyelids (Va. Sha.). Blood vessels are deep red (Kan.).

It is due to *Rakta-Dosha*, and is curable; venesection should be done.

(Acute Catarrhal Conjunctivitis).

40. *Raktabhishyanda.*

A redness of the whole eye accompanied by deep red lines all over, flow of copper-coloured tears, and symptoms of *Pittabhishyanda* (41). It is due to *Rakta-Dosha*, and is curable; venesection is advisable.

(Acute Catarrhal Conjunctivitis; Pink Eye).

41. *Pittabhishyanda.*

Presence of reddened blood vessels, burning sensation, flow of hot tears, cloudy vision, yellowness of the eye, and suppuration. There is inflammation as if after an application of alkali, darkening of the eyelids, a flow of hot and yellow tears, redness of eyes, and yellow vision (Va.). Cold applications are welcome.

This is due to *Pitta-Dosha*, and is curable; venesection is advisable.

(Acute Blenorrhoea. Acute Conjunctivitis with muco-purulent discharge).

42. *Vatadhimantha.*

This is a cloudy condition and swelling of the eyes, accompanied by a tearing, churning, piercing, cutting, and irritating pain; the same side of the head is swollen, painful, with a cracking sensation and general shivering; the eye remains closed; if neglected, or after injudicous diet, blindness may come on in six days. Some commentators consider excruciating pain and hemicrania as peculiar to *Vatadhimantha.* There are noises in ears and giddiness (Va.).

(Acute Orbital Cellulitis,—1st stage).

43. *Kaphadhimantha.*

A swelling and reddening of the eye with slimy mucoid discharge, itching sensation, coldness and heaviness of the part and cloudy vision; objects seem covered with dust; nostrils are dilated; there is headache and horripilation. The cornea sinks down and much of the sclerotic is visible; there is salivation, swelling of the nose, and gritty sensation in the eye (Va.).

It is curable; but if neglected or after injudicious diet, blindness may come on in seven days; venesection should be done.

(Acute Orbital Cellulitis—2nd stage).

44. *Sira-harsha* Syn.—*Sira-praharsha*, (Ma.), *Shira-harsha.*

An advanced condition of Shirotpata where there are copious copper-coloured discharges from the eye; blindness may result. This is an affection of the conjunctiva and sclera, and not of the whole eye; there is lachrymation and difficulty of seeing (Va.).

It is due to *Rakta-Dosha*, and is curable; venesection should be done.

(Acute Orbital Cellulitis,—3rd stage).

45. *Raktadhimantha.*

A painful condition of the whole eye, in which there is sensitiveness to touch, pricking pain, and blood-streaked secretion; the eye looks red like a flower of *Pentaptes phoenicea*; the whole eye looks like a *Sapindus detergens* fruit dipped in blood. The borders of the eye are red; the eye feels pulled out, and there is giddiness (Va.).

It is curable; but if neglected or after injudicious diet, blindness may set in, within five days; venesection should be done.

(Acute Orbital Cellulitis,—3rd stage).

46. *Pittadhimantha.*

A swelling of the whole eye with burning sensation, sweating, suppuration, yellowish vision and the presence of blood-tinged lines on the eye; fainting fits and burning sensation in the head are present. The eye looks liver-coloured and ulcerated, as if after the application of an alkali.

It is curable; but if neglected, or after injudicious diet, blindness may come on instantaneously or in three days; venesection should be done.

(Acute Orbital Cellulitis,—4th stage).

47. *Sashopha-netrapaka.* Syn.—*Sashopha-paka, Sashothakshi-paka* (Va.), *Sashothapaka-linga* (Ma.).

A redness of the whole eye like the colour of *Ficus glomeratus* fruit; burning and itching sensation; deposit of mucus in the eye, and lachrymation; the eye becomes copper-coloured, and feels heavy; there is pricking pain and horripilation; the eye is swollen, there is constant discharge of cold or hot slimy secretion, which ultimately becomes purulent. There is great inflammation (Kart.).

It is due to *Sannipata-Dosha* and is curable.

(Panophthalmitis from purulent Irido-cyclitis; it may follow Orbital Cellulitis or Hypopyon Ulcer; the eyeball is a sac full of pus).

48. *Ashopha-netrapaka.* Syn.—*Ashopha-paka, Ashothakshi-paka* (Su.), *Alpashopha-paka* (Vo.).

All the symptoms of *Sashopha-netrapaka* are present excepting the swelling of the eye. This is also due to *Sannipata-Dosha* and is curable.

(Phthisis bulbi subsequent to serous Irido-cyclitis).

49. *Hatadhimantha.* Syn.—*Drishtyut-kshepa, Sakal-nayana-shosha* or *Drishti-nirgama* (Vi.).

When *Vatadhimantha* is neglected all the symptoms, including pain become more acute. The *Vata* incarcerated in the internal blood-vessels affects the faculty of sight and the complaint becomes incurable (Vi., Su.).

There are severe pains and ulcers on the pupil; the eye-sight is lost (Va.). Videha says there are two types of this disease :—(1) *Drishtyut-kshepa*,—in which *Vata* in the blood vessels enters the faculty of sight and destroys it; afterwards, there are severe pains and churning sensation (Vi.); (2) *Sakala-nayana-shosha*,—in which the *Vata* dries the whole eye like a dried lotus flower and destroys eye-sight (Vi.).

(Phlegmonous Orbital Cellulitis,—last stage of Phthisis pulbi).

50. *Pilla* (Va.). Syn.—*Atilomasha.*

Vagbhata is the only one who gives a detailed description of this disease. It is, according to him, a very chronic stage of some 18 diseases where the treatment for all of them becomes identical :—one disease of the inner canthus : (1) *Puyalus;* one disease of the eye-lashes region; (2) *Pakshmoparodha* (*Pakshma-kopa*); seven diseases of the eyelid; (3) *Pittot-klishta* (*Vartma-bandha*), (4) *Kaphot-klishta* (*Klinna-Vartma*), (5) *Raktot-klishta* (*Klishta-Vartma*), (6) *Sannipatot-klishta* (*Krichronmila*), (7) *Kukunaka*, (8) *Bisa-Vartma*, (9) *Pothaki*; and nine diseases of the whole eye—(10) *Shushkakshipaka*, (11) *Amloshita*, (12) *Alpa-shopha*, (13) *Pittabhishyanda*, (14) *Kaphabhishyanda*, (15) *Rakta-bhishyanda*, (16) *Pittadhimantha*, (17) *Kaphadhimantha*, (18) *Raktadhimantha.*

The treatment is repeated scraping of the eyelids, venesection, purgatives, washing the eyes, collyriums, errhines, and inhalation of medicated smoke.

There is inflammation of the eyelids; *Pilla* is due to *Pitta* and *Kapha-Dosha.* Videha uses the term *Pilla* with reference to *Praklinna-Vartma.*

(Chronic Conjunctivitis).

E. Diseases of the Sclerotic (11).

51. *Shuklarma.*

Soft whitish growths slowly spreading over the entire sclerotic. They are due to *Kapha-Dosha,* are curable, and should be excised.

(Pingueculum).

52. *Prastaryarma.* Syn.—*Nilarma.*

A thin elongated reddish-blue swelling on the sclerotic. It is a dark-red fleshy growth (Ni.), soft painless and swiftly growing (Va.).

It is due to *Sannipata-Dosha,* is curable and should be excised. *Snayvarma* results from *Prastaryarma* (Vi.).

(Pterygium).

53. *Snayvarma.*—Syn.—*Snavarma.*

Rough, yellowish, or white, fleshy growth on the sclerotic and slowly increasing in size. When the discharge of *Prastaryarma* is stopped by *Vata-Dosha,* then it is called a dischargeless or dry *Snayvarma* (Ni. Vi.).

It is due to *Sannipata-Dosha,* is curable, and should be excised.

(Pterygium).

54. *Lohitarma.*—Syn.—*Shonitarma, Raktarma* (Va.), *Kshata-jarma.*

A fleshy growth on the sclerotic resembling a red lotus in colour. It is due to *Rakta-Dosha* and injury; it is curable and should be excised.

(Pterygium).

55. *Adhimansarma.*—Syn.—*Adhikamanasajarma.*

A soft, extensive thick dark-brown or liver-coloured fleshy growth on the sclerotic. It is due to *Sannipata-Dosha,* is curable, and should be excised.

(Pterygium).

56. *Sirajala.*—Syn.—*Jala.*

Red and extensive patches of hardened blood-vessels spreading over the sclerotic and looking like a net-work. They are due to *Rakta-Dosha,* are curable and should be excised.

(Pannus).

57. *Sira-pidika.* Syn.—*Siraja, Siraja-pitika.*

A crop of white pustular growths on the sclerotic near the limbus, and covered over with fine blood-vessels. There is burning and rubbing sensation; they occur near the cornea and are of the size of mustard (Va.).

They are due to *Sannipata-Dosha,* are curable and should be excised.

(Scleritis near the limbus, associated with Iritis).

58. *Pishtaka.* Syn.—*Pishtarma.*

A raised circular dot or spot on the sclerotic whitish like rice-paste, and watery. The sclerotic looks like a dirty mirror and the spot appears bluish on account of *Vata-Dosha* (Ma.).

It is due to *Kapha-Dosha* and is curable. No operation is required.

(Scleral nodules in rheumatic condition; Episcleritis).

59. *Balasa.* Syn.—*Balasa-grathita* (Bh.).

A bell-metal coloured painless spot on the sclerotic, and covered over with blood-vessels. It is a hard spot like a drop of water (Ma., Da.). It is due to inflammation, is like a drop of water, thick, soft, heavy, and smooth (Va.).

It is due to *Kapha-Dosha,* is curable and no operation is required. It is due to *Vata-Dosha,* (Vi.).

(Scleritis associated with Iritis,—outside the limbus).

60. *Shuktika.* Syn.—*Shukti.*

Dark brown spots of a fleshy colour or of the colour of that of an oyster-shell, appearing on the sclerotic. The spots may be yellowish, and the sclerotic looks like a dirty mirror; fever, thirst and diarrhœa occur in this complaint (Va.).

They are due to *Pitta-Dosha,* are curable and need no operation.

(Xerophthalmia).

61. *Arjuna.*

A single dot or spot coloured like hare's blood on the sclerotic. It is painless and smooth (Va.). It is due to *Rakta-Dosha* and is curable.

(Sub-conjunctival Ecchymosis).

F.. Diseases of the Corneal Region (5).

62. *Sira-shukra* (Va.).

The cornea is full of réddish blood vessels; there is pricking and burning sensation; hot or cold, thin or thick tears flow without cause. This is due to *Sannipata* and *Rakta-Dosha;* it is incurable (Ad.).

(Corneal Ulcer,—1st stage).

63. *Sa-vrana-shukra.* Syn.—*Kshata-shukra* (Va.)

A punctiform hollow in the *krishna-mandal,* accompanied by a pricking sensation, extreme pain, and hot discharge. The ulcer looks as if the cornea is cut up by a needle; therefore, there is pain like the prick of a needle (Vi.). It is due to *Rakta-Dosha* and is incurable. *Pitta-Dosha* causes the ulcer in the cornea or the pupil area (Va.).

If, however, it is distant from the pupil, and there be no double spots, nor discharge, and little pain, it is occasionally curable with difficulty; otherwise it is incurable.

If the speck is on the cornea and is accompanied by small pustules and hot tears it is likewise incurable; as also the one in which the speck is of the colour of the feather of a pheasant. (There is a confusion of verses attributed to *Sa-vrana,* and *A-vrana-shukra.* Panjikakar's reading quoted by Dallan appears to be correct).

(Fresh Corneal Ulcer; Healing Corneal Ulcer).

64. *A-vrana-shukra.* Syn.—*Shudha-Shukra* (Va), *Shukla* (Ma.).

A whitish film appearing on the region of the cornea, like a speck of transparent cloud in the sky; it is accompanied by tears, slight pain, and redness of the conjunctiva. It is due to *Rakta-Dosha* and is easily curable.

A thickened deep-seated, long standing film is cured with great difficulty.

If it is covered with shreds of flesh, full of blood-vessels, goes deep down to the second *Patala* (capsule of the lens?), obstructs vision or cuts it asunder in the middle, has reddish margins, and is of long duration, it should be considered incurable.

The spots look white like a conch or moon or *kunda* flower (Ma.). It is due to *Kapha-Dosha* (Va.).

(Healed Corneal Ulcer,—Nebulæ, Maculæ, Leucoma).

65. *Akshi-pakatyaya.* Syn.-*Pakatyaya, Pakatyaya-Shukra* (Va.). *Shirasanga* (Sha.).

The appearance of a whitish film over the cornea which is entirely covered with it in time, and accompanied by acute pain. There is redness of the conjunctiva, burning and swelling of the eye; there is loss of vision; the patch on the cornea (*Shukra*) is reddish in colour, is either projecting or depressed; the eyes are irritable, dirty tears flow; the sclerotic is reddish and covered with secretion and there are irregular severe pains. The blood vessels of the eye are prominent (Ad.). Vagbhata describes two diseases:—(1) *Pakatyaya-Shukra*, in which there is excessive pain, redness, burning and inflammation; (2) *Akshipakatyaya*, in which the symptoms are the same as those given by Sushruta.

It follows *Akshi-kopa* or *Abhishyanda;* is the result of *Sannipata-Dosha*, and is incurable. It results from *Srava;* if it is one year old and perforated, or if there are very severe pains, it should be given up as incurable (Va.).

(Hypopyon Ulcer).

66. *Ajaka.* Syn.—*Ajakajata.*

A painful reddish growth like the feces of a goat; it appears from beneath the cornea piercing it, and is characterised by reddish slimy secretion. The growth is fatty because according to Videha it arises from third *Patala*! (Bhava-Mishra).

It is due to *Rakta-Dosha* and is curable; the thin watery matter accumulated in the eye in *Ajaka* should be removed by a puncture at either end of the growth with a needle, after which the ulcer should be filled with beef and ghee; scarification should be repeated as often as the growth comes on.

(Anterior Staphyloma,—prolapse of Iris through the ulcerated cornea).

G. Diseases of the Vision-Region (16).

67. *Nakulandhya.* Syn.—*Nakulandha.*

Objects appear multicoloured during the day; the pupil looks like that of the Mungoose. There is night-blindness (Dallan).

It is due to *Sannipata-Dosha* and is incurable. Temporary relief can be given (Va.).

(Erythropsia,—a disease of the Optic Nerve and Retina).

68. *Shlesma-Vidagdha-Drishti.* Syn.—*Doshandha, Naktandha* (Kan.), *Amlapitta-vidagdha-Drishti* (Sha.).

Objects appear white, and there is night blindness; day vision is possible only because of the melting of the *Dosha* through the Sun's heat. The *Dosha* is found in the three *Patala*. Adhamalla says *Amlapitta-vidagdha of* Sharangdhara is the same as *Shleshma-Vidagdha.*

The complaint is due to *Kapha-Dosha,* and is curable; no operation is required.

(Nyctalopia,—a result of Couching, Retinitis pigmentosa, Xerophthalmia, &c.).

69. *Ushna-Vidagdha-Drishti* (Vi.).

Objects appear dim during the day and there is night-blindness. There is burning of the eyes and smarting; the conjunctiva looks dirty (Va.).

This is due to moving about in the sun or having a sudden plunge in cold water; *Sannipata-Dosha* and *Rakta-Dosha* add to the effect of outside heat, enter the eye, and affect it; it is curable (Va.). The impairment of eye-sight may be due to sweat getting into the eye (Ad.).

(Nyctalopia).

70. *Pitta-Vidagdha-Drishti.* Syn.—*Divandha.*

Objects look yellow and are visible only at night, and not during the day; the pupil is of a yellowish colour.

It is due to accentuation of *Pitta-Dosha* in 3rd stage of *Timira;* it is curable and no operation is required.

(Hemeralopia,—due to Retrobulbar Neuritis, Toxic Amblyopia, Reflex Blepharospasm, Early stage of Optic Atrophy).

71. *Hrasva-jadya.* Syn.-*Hrasva-jatya, Hrasva-Drishti.*

Small objects are seen with difficulty during the day and clearly at night. According to Madhava, Dallana, and Videha, night-blindness occurs. *Nakulandha* and this *disease* are affections of the 4th *Patala* (Vi.). There is no night-blindness as *Pitta-Dosha* lessens at night (Ad.).

The complaint is due to *Pitta-Dosha* during the day and the improvement at night is due to cooling down of this *Dosha* (Su. and others). It is incurable.

Videha mentions four kinds of night blindness of which *Nakulandha* and *Hrasva-jadya* are two; the other two are not known.

(Partial Day-blindness? Night-blindness?).

72. *Dhuma-Drishti.* Syn.—*Dhumar, Hutabhug-dhvaja-darshi.*

Objects appear dirty or smoke-coloured. Objects are dusky during the day, but not at night (Kan.).

The complaint is due to grief, fever, over-strain, excessive exercise, injury to head, &c.; *Pitta-Dosha* is generated; it is curable and no operation is required. It is a disease of the external *patal* (Gadadhar), or of the third *patal* (Kartiki).

(Partial Day-blindness,—of Glaucoma or Retinitis).

73. *Amla-dhyushita-Drishti.* Syn.—*Amla-Vidagdha-Drishti* (Va.), *Amloshita* (Va.), *Amla-pitta-Vidagdha-Drishti* (Sha.).

A swelling of the whole eye which is tinged bluish-red. It is caused by taking acid food or high acidity of stomach, which generate *Pitta-Dosha.* It is curable and no operation is required (Su.).

Vagbhata describes two diseases with almost similar names:—(1) *Amla-Vidagdha-Drishti,*—pain, itching and dirty eye; the trouble is with *Drishti* alone. (2) *Amloshita,*—swelling and inflamation of the whole eye, lachrymation and very dim vision. Both these are due to eating highly acid substances and the eye is filled with *Sannipata* and *Rakta-Dosha.* In acidity of stomach, there is danger to eyesight because of the vomiting; vomiting does not occur without *Kapha-Dosha;* hence this disease is related to *Shleshma-Vidagdha-Drishti* (68) (Ad.).

(Premonitary symptoms of Glaucoma).

74*a*. *Linganasha* (complete). Syn.—*Nilika* (Gadadhar).

Complete *Linganasha* causes loss of vision, and may be due to any of the six types of *Dosha,*—*Vata, Pitta, Kapha, Rakta, Sannipata,* and *Rakta-Pitta.*

(Optic Atrophy; Glaucomatous atrophy).

74*b*. *Linganasha* (incomplete). Cyn.-*Kacha* (Gadadhar); *Kacha-Bindu* (Va.).

Incomplete *Linganasha* admits of faint perception of brilliant objects like the sun, moon, stars, flashes of lightening, &c.

The complaint has three preliminary progressive stages of defective vision called *Timira.*

74*c*. *Timira.*

Timira or partial vision is due to any one of the six *Dosha,* and ends in *Linganasha* if neglected. Three stages can be recognised:—

1st Stage—The objects appear dim and hazy when the deranged *Dosha* passing through the blood-vessels get incarcerated in the 1st *Patal.*

(Corneal Opacities; commencing Corneal Astigmatism; Iritis, Pupillary Membrane, &c.)

2nd Stage—False images of gnats, flies, hairs, nets, cob-webs, mirages, flags, circles, &c. appear;

Objects seem hazy as if seen through a layer of water, and meteors of different colours seem to be falling constantly in all directions; near objects may appear remote, and remote ones may appear far off; a needle is difficult to thread; there is also increasing pain (Su.). Near objects are difficult to see and distant objects are not visible (Va.).

(Choroiditis; Cyclitis; Vitreous Opacities; Paralysis of Ciliary Muscle; Commencing Cataract; Chronic Irido-choroiditis; Synchysis scintillans; Micropsia; Macropsia; Errors of Refraction; Astigmatism; &c.)

3rd Stage—Any part of the field of vision is lost, *e.g.*, upper, lateral, lower or central, according to the location of the *Dosha*. An object may appear cut in two, three or more parts; and the external world looks dim and confused. The pupil becomes coloured in different ways according to the *Dosha*. The sight becomes weaker.

Vagbhata recognises two stages of *Timira;* many of the symptoms of Sushruta's third stage appear in his second stage. His third and fourth stage of *Timira* are the incomplete and complete *Linganasha* of Sushruta, respectively.

First and second stages are curable; In the third stage only temporary relief is obtainable.

Vagbhata describes a *Pseudo-Timira* caused by anxiety, mental shock, fear, grief, excessive heat, and sitting on one's haunches; or by emetics, errhines, purgatives, mistakes in medicinal treatment, vomiting of undigested food; by neglecting the pangs of hunger and thirst; and at the end of many eye-diseases. This condition can be easily cured.

(Dislocation of the Lens; Detachment of the Retina; Optic neuritis; Exudation in Pupil; Opacity in Lens; Exudation on Macula; Hemianopia; Amblyopia; Bilateral Amaurosis; Metamorphosia).

74. *Pittaja-Linganasha.*

The objects appear coloured like the spectrum of a rainbow, a glow-worm, flash of lightening, or feathers of a peacock; and are of a dark-blue tint or almost black in the *Timira* (incipient) stage. The pupil looks blue or bluish-yellow, and the circular patch on it is of the same colour or like that of bell-metal, and vision is lost.

The pupil is contracted and objects appear small *Hrasva-Drishti* (Va.).

No operation can be done and relief is only temporary.

(Glaucoma? Glioma of Retina showing yellow reflex from the pupil and called Amaurotic cat's eye? Xanthopsia due to Cirrhosis of liver or jaundice?).

75. *Parimlayi-Linganasha.* Syn.—*Sansarga-Linganasha.*

The skies appear yellow and shining, like the effulgence of the rising sun; trees seem to sparkle with fire-flies.

It is due to the double action of *Pitta* and *Rakta Dosha;* temporary relief of symptoms is only possible on treatment. The colours are due to the affection of the third *Patala;* it is due to *Sannipata-Dosha.* (Satyaki).

(Glaucoma ?).

76. *Kaphaja-Linganasha.*

Objects look white, oily, dull, hazy, and cloudy, as if seen through a sheet of water; a thick layer like a white cloud or deep white *Chamara* seems to intervene in the *Timira* stage; The pupil looks white and the circular patch over it is thick, oily, and white like a conch-shell, *Kunda* flower, the moon, or like a drop of water on a moving lotus leaf.

A surgical operation of Couching (Scleronyxis) is advised, but relief is only temporary. It is curable (Va.).

Vagbhata gives a detailed description of this disease, especially of the cataractous stage. In this stage the moon, the sun, lamps, &c. are seen on all sides as lustreless objects. The cataract contracts in bright light and expands in the dark. An unripe cataract is irregular, fluid like curds, and if pulled down with a needle, goes up again; there are severe pains, and it keeps on developing when there are indiscretions in diet (Va.).

This cataract according to Vagbhata is white because of the *Kapha-Dosha,* but becomes bluish when other *Dosha* are mixed with it; while light it still perceptible, this cataract has six varieties :—

1. *Avartaki* :—It is actively moving, is reddish or dark.
2. *Sharkara* :—It becomes very thick as if heavily smeared with the juice of *Calotropis gigantea.*
3. *Rajimati* :—It appears filled up with small veins like the hairs on rice husk.
4. *Chhinnanshuka* :—It looks uneven, or cut up, or burnt up; and is extremely painful.
5. *Chandraki* :—It has the colour of bell-metal and looks like a floating layer of oil.
6. *Chhatraki* :—It looks like an umbrella and is of a variegated colour.

A cataract is ready for "Couching" only when nothing can be seen.

(1. White Cataract; 2. Dislocated Cataractous Lens; 3. Abscess of Vitreous; 4. Seclusive Pupil; 5. Pupillary membrane).

77. *Vataja-Linganasha.*

All external objects appear cloudy, moving, crooked, and red-coloured in the *Timira* stage; the pupil looks reddish and the circular patch over it is red-coloured, moving and rough to touch. Nets, hairs, flies, rays of light are seen; objects appear multiplied; if neglected, it develops into a cataract and then *Linganasha* results (Va.). No operation can be done and only temporary relief can be given.

(Uveitis, Retinitis).

78. *Raktaja-Linganasha.*

Objects appear red or enveloped in gloom and assume a greyish, blackish, or variegated colour, in the *Timira* stage; the pupil is blood-red in colour and the circular patch over it is red-coloured like a coral or red-lotus-petal; vision is lost later on.

No operation can be done; temporary relief is possible.

(Acute Intraocular hæmorrhage; Cataract with Injury).

79. *Sannipataja-Linganasha.*

Objects look variegated and confused, double or triple; stars or planets look defective, or with additional limbs, and seem to float about in the field of vision in the *Timira* stage. The pupil is of a variegated hue.

No operation can be done and temporary relief is possible.

(Cataract? Chronic Intraocular Hæmorrhage).

80. *Sa-nimitta-Linganasha.* Syn.—*Surya-Vidagdha-Drishti; Agantuka-Linganasha.*

The symptoms are those of *Raktaja-Abhishyanda* (Dallan, Gadadhar); the pupil is sunk in, pierced, or impaired.

It is due to visible and ascertainable injury, or overheated condition of the brain from smelling of poisons or highly scented flowers; *Sannipata-Dosha* is aggravated according to Sushruta and Kartika; it is incurable.

(Photo-ophthalmia; Photo-retinitis; Toxic Amblyopia).

81. *A-nimitta-Linganasha.* Syn.—*Aupasargic-Linganasha.*

The eye is outwardly unaffected; the pupil looks like a gem. The cause of injury to the eye is invisible in the waking state, *e.g.*, witnessing a divine halo, demi-gods, holy saints, celestial serpents, or such other highly bright objects. Or when one looks at an eclipse of the sun, burst of fire, or lightening or very bright objects (Va.). When the *Dosha* disappears, eyesight may return in course of time (Ad.).

(Amblyopia due to congenital paralysis of muscles; Optic Atrophy; Photo-ophthalmia).

82. *Gambhirika.* Syn.—*Gambhira-Drishti.*

The pupil is contracted, deformed and sunk in its socket; the eye is extremely painful.

It is due to *Vata-Dosha* and is curable. *Vata* causes muscles to contract and the pupil is turned inward.

(6th Nerve Paralysis).

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Study of Susrutian Ophthalmology

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Recently there has arisen a peculiar interest in our ancient medical literature consequent upon our contact with modern scientific ideas. In the A. M. C. Ophthalmic Bulletin Issue No 1, there appeared an anonymous article on 'Ophthalmology 500 B. C.' wherein an interpretation of the Susrutian text has been given. A few days after that in the Tilak Mahavidyalaya Quarterly I wrote an article in which I gave my own interpretation of the Susrutian Anatomy of the eye, which differs in certain important respects from that of the Bulletin article. In the presidential address of the last Ayurvedic conference DR. GANANATH SEN declared that the Susrutian Anatomy of the eye is in a state of confusion brought about by redactors. I cannot accept this view. A few days ago there appeared a Sanskrit book नेत्रचिकित्सा by DR. MOONJE of Round Table fame. In this book the veteran doctor refers several times to SUSRUTA but mainly to sections other than Anatomy. One of his observations relating to symptomatology deserves a comment from students of Ayurveda.

My view is in substance this. Susrutian Ophthalmology (Anatomy) belongs to a primitive stage and is consequently very simple, very short and at the same time very sweet. SUSRUTA writes from the surgeon's point of view, and therefore does not enter into details that have no bearing on treatment then in vogue. To him the eye presents three important kinds of structures, the *Mandalas*, the *Patalas* and the *Sandhis*. The *Mandalas* make up the front view, and the description of the *Patalas* serve him the same purpose as the median section does to the moderns. The *Mandalas* are five concentric rings पक्ष्म, वर्त्म, श्वेत, कृष्ण and दृष्टि. From without inwards we call them now lashes, lids, white of the eye, black of the eye *i. e.* the cornea and lastly the pupil. The junctions of these concentric rings are the *Sandhis*. They also include the angles of the eye, *Kaneenaka* being the medial and *Apanga* the lateral.

SUSRUTA then describes the eye layer by layer. In this way the *Patalas* are made out. In number they are six or four according as we include or exclude the lids amongst them. Excluding the lids the cornea is the outermost. Next is the vitreous. Last of all is the retina, chorioid and sclera all taken together. The way in which these layers are named is peculiar. The first is called तेजोजलाश्रित. तेजोजल means clear transparent fluid and therefore appropriately stands for the aqueous humour. This is supported by the outermost layer and therefore it is the cornea. The second layer is पिशिताश्रित that is supported by flesh. Taking the iris to be this flesh, this layer comes to be the lens. The fourth layer is described to be अस्थि आश्रित that is resting upon bone. This is all that SUSRUTA has to say about the Anatomy of the eye. This suffices him for classifying and describing the various diseases of the eye which I will now proceed to describe.

The diseases are classified according to the *Mandala* in which their symptoms appear. Further classification is afforded by the four miasms वात, पित्त, कफ and रक्त determined by the character of the symptoms. Among the diseases of the *white Mandala* are included pterygium, pinguecula and phlyctenular conjunctivitis along with episcleritis and scleritis. Diseases of the *black Mandala* are four in number. Two of them are corneal opacities one with and the other without corneal ulceration. The third is the sloughing of the whole of the cornea and the fourth is the perforation of the cornea with prolapse of the iris. The iris is here referred to as the second त्वक् or covering. There is a class called सर्वगत रोग the symptoms of which appear in all the rings except perhaps the outermost, that is the lids. Here are found all forms of acute conjunctivitis, and trachomatous pannus, as also acute glaucoma. Next come the दृष्टिगत diseases the symptoms of which are to be found in the pupillary region. With this are incorporated all conditions affecting vision. They are termed तिमिरs.

The first of these diseases is central opacity of

the cornea, the first *Patala*. Next comes blurred vision, scintillating scotomata, muscae volitantes etc. These are attributed to diseases of the second *Patala*, *i.e.* the lens. Next to this are described partial vision, distorted vision, multiple vision etc. They are attributed to disease occurring in the third *Patala* that is the vitreous. Last of all comes complete loss of useful vision. Here two distinct stages are recognized, the earlier in which light perception is present and the later in which this is lost.

Then follows a classification of defects of vision based upon the four miasms वात, पित्त, कफ and रक्त, which is very significant of Ayurveda. Vision in which images are seen distorted, moving, indistinct and *Aruna* in colour is वात दृष्टि, vision in which there are shining white spots or bright yellow spots is पित्तदृष्टि, vision in which images are white, cloudy, magnified and as if wet with water is कफदृष्टि, and vision in which images are red is रक्तदृष्टि. Next to this is a similar classification of blindness, the colour of the pupillary region determining the miasm. Thus ripe cataract comes to be called श्लैष्मिक लिंगनाश. Other forms of लिंगनाश *i.e.* blindness probably are various forms of iritis in which the pupil is blocked up with exudates.

To this group are added six more diseases (1) day blindness (2) night blindness (3) smoky vision (4) vision in which images are seen contracted and those too only by day (5) नकुलान्धता named similarly to the Cat's eye of the moderns (6) गभीरिका Phthisis Bulbi. SUSRUTA has two more diseases to add. One is amblyopia following sight of very bright objects, or perhaps without any recognizable cause. Here the author particularly remarks that in this disease the pupillary region is quite clear.

Then follows the treatment section which although equally or even more interesting than the one already dealt with, I leave aside for the present and turn to explain my differences of which I spoke in the beginning of this discourse.

It will be clear from what has just been said that the Susrutian Anatomy of the eye though very primitive is quite systematic and clear. It presents no confusion whatever. It, of course, presents certain conjectures which of late years have turned out to be wrong. SUSRUTA was not conversant with those details of Anatomy with which modern means have made us so familiar. In the earlier sections of his work he has given us a clear idea of the ways and means of investigation that were at his disposal. Among the mass of surgical instruments and accessories mentioned in the first section, optical instruments find no place, although the *Shalakas i.e.* slender instruments find so prominent a place as to initiate a separate branch of surgery called *Shalakya Tantra* which we now indicate by the cumbrous name "Surgery of the Eye, Ear, Nose and Throat". In the third section the process of dissection then in vogue has been given. But that does not go beyond examination of the dead body after a process of maceration for about a week. If one places oneself in the position of an investigator equipped with these ways and means he will arrive at an interpretation not very different from what I have given here.

The A. M. C. Bulletin article says that श्वेतमंडल stands for the sclera and cornea taken together, while कृष्ण stands for the iris, ciliary body and the chorioid. That this is far from the truth is very easily seen. In Susruta the श्वेत diseases do not include the corneal ones. It is interesting to note that the article in question gives the following quotation from Susruta by which the interpretation given in that very article is refuted point blank.

विमुक्तं सर्वतश्चापि कृष्णात् शुक्लात् च मंडलात्। Here SUSRUTA describes the removal of a pterygium. He advises its separation from both श्वेत and कृष्ण regions. These are, therefore, the regions where the pterygium spreads. कृष्णमंडल therefore does not mean the iris. It must mean the cornea, which is, therefore, not included in the श्वेतमंडल.

I do not know exactly what is the difficulty in taking the कृष्णमंडल to mean the cornea. Perhaps the knowledge that it is not black stands in the way. But the difficulty is not insuperable. At first sight the cornea does look black. This gives the structure its name, although further study reveals the cause of blackness to be in the layer behind the cornea. If we consider

the origin and present connotation of the word 'rectum' in modern anatomy, we shall not be surprised at what I have said about the कृष्णमंडल. The Bulletin article further translates दृष्टिमंडल as the retina into brackets 'with the lens and the vitreous'. The article takes दृष्टि to mean macula and in support quotes a stanza in which the दृष्टि said to be मसूरदलभाज, that is as large as a मसूरदल. Now this is far too large a size for the macula. But it exactly represents the pupil. In fact दृष्टि here stands for दृष्टिमंडल and nothing else. While describing the symptoms of ripe cataract SUSRUTA says सध्यमाने च नयने मंडलं तद् विसर्पति। The दृष्टिमंडल dilates as the eye is closed. Literally सध्यमाने means while being rubbed. धाध्यमाने is probably the correct reading.

The Bulletin article takes the *Patalas* to mean structures outside the eyeball. But this is quite inconsistent with the description of diseases due to abnormalities in the *Patalas*, given under the दृष्टि diseases. SUSRUTA mentions the *Patalas* in order to explain the defects of vision, and they are incorporated in the chapter on diseases of the दृष्टि *Mandala*. The *Patalas*, therefore, are structures through which light has to pass as it enters the eye. One of the *Patalas* is पिशितास्रित. The Bulletin article takes it to mean the muscular covering of the eyeball. In this interpretation the word आस्रित loses its significance altogether. It is not simply पिशित or flesh but is पिशितास्रित that is supported by flesh. Moreover, there is no reason why SUSRUTA should have attributed defects of vision to the coverings of the eyeball. On the other hand it is quite natural that he should attribute them to abnormalities occurring in the way of light. That vision depends upon light is a quite familiar fact. That light passes through the pupil is very easily discoverable. The couching operation must have made him familiar with the पिशितास्रित *Patala*. Most probably he had ample opportunities to see the escape of vitreous. The idea that it must have a solid support behind is most immediate. In this way the idea of the *Patalas* must have developed. It is no wonder, however, that when it came to exact location of the diseases SUSRUTA could not but fall into errors so far as the hinder *Patalas* were concerned. It is in this way that Susrutian Ophthalmology can be construed without the least self-contradiction, which is sure to arise if one endeavours to establish identities between ancient and modern scientific systems

I will now turn to DR. MOONJE'S work. At the end of the chapter on विकृति, under symptomatology he quotes two stanzas from Susruta and styles them as instances of शीतानुग्रहीतदृष्टिता and सूर्यानुग्रहीतदृष्टिता (page 98). Here the symptoms that SUSRUTA points out are really (1) day blindness (2) night blindness. SUSRUTA explains (1) on the theory that the malady is due to पित्त and as at night पित्त gets less, शीत favours the patient with vision. शीतानुग्रह is really the cause of night vision and consequently day-blindness and not a symptom by itself. Similarly सूर्यानुग्रह is given as the cause of day vision and night blindness. Here the doctor has made a very funny interchange of cause and effect.

Problems of Ophthalmological work in India

By B. P. BANAJI, F.R.C.S.I., Bombay.

Being the Presidential Address delivered on 20th July, 1931 at the Second All-India Ophthalmological Conference held at Bangalore.

Dewan Saheb, Ladies and Gentlemen,

I thank the members for paying me the compliment of selecting me as President. I am conscious of my shortcomings but I trust that with your help and sympathy I shall be able to perform my duties satisfactorily. The Society has entered into its second year of existence and the utmost care and vigilance are required if the tender plant of to-day is to become the hardy perennial of the future. After the first meeting

the brunt of work has fallen on the shoulders of our energetic Secretary, DR. ZACHARIAH, to whose efforts we owe the publication of the transactions. He was ably supported in his work by the co-Secretary DR. SHROFF. I am glad to announce that for the encouragement of scientific ophthalmological work, a donation has been offered by a benevolent Parsee gentleman, from the interest of which a prize or medal will be given from the next year to the Indian ophthalmologist responsible either for the best piece of original eye work or a thesis giving a critical resume of recent advances in Ophthalmology.

Before proceeding further one has to regretfully announce the great loss that Ophthalmology has suffered recently in the death of three towering personalities, Professors GULSTRAND, FUCHS and AXENFELD. I had the privilege of knowing the latter two, and was as much impressed by their humility as by the great depth of their knowledge.

During the last seventy years the Science of Ophthalmology has taken tremendous strides forward. The discovery of the Ophthalmoscope, the monumental work of VON GRAEFFE, the putting into practice of PASTEUR'S Antiseptic Theory have revolutionised Ophthalmology. The last fifteen years have seen the use of the Slit Lamp, the Red Free Light and the Irradiation Apparatus in the ophthalmic surgeon's clinic. To this may be added the latest discovery of the use of BUCKY'S Rays (holding a position in the spectrum midway between the ultraviolet and x-rays) which promise to be a great advance in the treatment of obstinate cases of external eye diseases, such as Herpetic Ulcers of the Cornea, Blepharitis, Episcleritis etc. The therapeutic property of BUCKY'S Rays is in consonance with its place in the spectrum *i.e.*, it is stronger than the ultraviolet and weaker than the x-ray. The eye is exposed for a few seconds to the action of the rays and splendid results are reported to have followed this method of treatment at the Vienna Clinic. The apparatus, however, is costly and liable to get out of order easily and it will be sometime before the Indian ophthalmic surgeon will get the benefit of a perfect instrument. One more item of gratification is the successful transplantation of graft of the human cornea with perhaps permanent benefit to sight which I have seen in Professor ELSCHING'S clinic.

These wonderful discoveries in Ophthalmology together with the great co-lateral discoveries in Pathology and Bacteriology have achieved most satisfactory results not only in the curative but also in the preventive aspect of eye diseases. In well-organised countries like England, thanks to preventive measures and the skilful treatment of affected eyes, the blindness attributable to smallpox is almost done away with, there being only six cases of blindness in the asylums in 1922. Trachoma has been practically eliminated from the British Army and the Poor Law Schools of London by observation of scrupulous cleanliness and segregation. Syphilis, undoubtedly a most potent cause of blindness, is slowly being brought under control and the attention of European Ophthalmologists is now directed towards preventing Phlyctenular Ophthalmia and Keratitis by avoidance of overcrowding and improvement in hygienic measures.

From this refreshing picture of man's constructive abilities in improving the lot of his fellowmen, we come to the depressing atmosphere of our own country. Strenuous work is done in India by both Government and State Hospitals to combat blindness but the efforts so far made barely touch the fringe of the problem. Whilst curative Ophthalmic Science is pouring its blessings on the victims of blindness in Europe, Indians in thousands and tens of thousands wait in vain for relief from even such curable maladies as ripe cataract.

India is a land of villages and poverty of the people is such that many of the villagers when they start for a Presidency Ophthalmic Hospital for their eye complaints have to spend in travelling the whole saving of a life-time. The least that the All-India Ophthalmological Society can do is to bring this appalling fact to the notice of the Government and the public. The only solution that comes to my mind is the establishment

of permanent travelling dispensaries manned by Surgeons trained to do eye operations visiting particular localities in certain seasons of the year. The Provincial Government may do well to take a leaf out of the book of the Blind Relief Association which with its modest means is doing an enormous amount of good.

Regarding preventive measures against eye diseases we should feel particularly interested in Myopia. It is essentially a disease of civilisation and certainly increases by close work such as reading and writing. Among the Parsees with almost cent per cent literates there are about thirty per cent Myopia. As compulsory education comes into vogue Myopia is bound to increase in India. Those who are responsible for school education should know that book work must be avoided as much as possible and gramophones and cinematograph theatres should be lavishly used to impart knowledge. This should be done in addition to good lighting arrangement and use of correct types in books. I do not wish to bother you about other preventible diseases such as Trachoma, Xerosis and Ophthalmia Neonatorum. These questions can be dealt with only by the State and let us hope that in the near future a Ministry of Health including one or two ophthalmic surgeons will take up this question which affects the economical welfare of the nation.

The society should exert its utmost to develop a spirit of research amongst its members. The amount of clinical material at our disposal is colossal and every endeavour must be made to do our bit in the laborious task of evolving new ideas in the treatment of eye complaints.

The Science of Ophthalmology can be compared to an edifice in the process of construction where individual workers like FUCHS and AXENFELD have laid one or more bricks bearing their names.

Now that Indians are eligible for responsible ophthalmic posts one feels confident that many of the bricks in our imaginary structure will bear the hall mark of Indian names.

The Indian ophthalmic fraternity has just come into existence and with organisation in its ranks and co-operation as its motto, it is bound to justify its existence.

Finally, I must express my feelings of great admiration and hearty thanks for the great conveniences created and the encouragement given to scientific pursuit, the hospitality provided by the model State of Mysore of which the well-known SIR MIRZA M. ISMAIL who so kindly opened the Conference, is the Prime Minister.

Appeal for Fund for General Organiser

The Central Council of the Indian Medical Association feel that much more energetic measures are needed for the establishment of branches of the Association all over India than those made hitherto, and that it is necessary to delegate this work to an officer who would be able to give undivided attention to this particular duty.

Col. Bhola Nauth, I.M.S. (Retd.), having very kindly placed his services at the disposal of the Central Council for this purpose, has been appointed as the General Organiser.

For the work Col. Bhola Nauth will have to travel a good deal about the country and there will also be incidental expenses, and as these cannot be met from the usual sources of the Association, it has been found necessary to institute a special fund for the purpose.

The Fund has been started with a donation of Rs. 50/- from a member who wishes to remain anonymous and the Central Council are confident that members will immediately realise the importance of the measures proposed and that there will be no hesitation on their part in coming forward with contributions.

Any sum, large or small, will be gratefully accepted by the Hon. Joint Secretaries at their office at 67, Dharamtala Street, Calcutta, and will be acknowledged by them.

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Editorial Comments

It has been variously estimated that the total blind population of the world is something like six million. To this figure India is said to contribute about a million and a half. These figures do not include those who are suffering from impaired vision of different degrees but are not blind. It must be admitted that the incidence as revealed in these figures is disquieting enough to merit the serious attention of the profession generally and the ophthalmologists particularly. Knowing how deplorable is the state of affairs in this connexion in India it is a matter of some consolation with us to have an annual gathering of ophthalmologists in order to discuss from various points of view the important questions regarding etiological and pathological investigation into the troubles and also to decide upon proper remedial measures. The second session of the All India Ophthalmological Conference was held at Bangalore on the 20, 21 and 22nd July last. Dr. B. P. BANAJI, F.R.C.S.I. of Bombay presided and the Conference was opened by Sir MIRZA M. ISMAIL, the Dewan of the Mysore State.

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The Conference was undoubtedly impressed on the one hand with the wide prevalence of eye diseases in India and on the other with the inadequate facilities for their treatment. This point was in fact driven home by Sir MIRZA ISMAIL and also by Dr. BANAJI. The latter said that "India is a land of villages and the poverty of the people is such that many of the villagers, when they start for a presidency ophthalmic hospital for their eye complaints have to spend in travelling the whole saving of a lifetime." In drawing public attention to this fact the Conference has clearly done its duty. It is to be hoped that they will not allow the matter to rest at this point but will energetically take the necessary steps to rouse the Government to perform their responsible duty to a helpless people in the shape of providing adequate facilities for proper treatment. Amongst the suggestions we find, one for the establishment of a Ministry of Health, another for encouragement of research work by ophthalmic practitioners and a third one for the institution of travelling eye dispensaries. It is a pity that the Conference was not attended by any official of the Imperial or Provincial Medical Service ; we trust, however, that the Services are in complete sympathy with these eminently reasonable and practicable suggestions and we have a right to expect that they will co-operate whole-heartedly in giving effect to these valuable proposals. Even with the full consciousness of the difficulties of the present financial situation, rendered complicated by innumerable demands upon the public purse, we make no apology to thrust this urgent matter upon the attention of the public and the Government as one requiring immediate action. Philanthropic efforts like those of Mr. HENDERSON of Khandesh, are responsible for much public benefit but no amount of private endeavour can be expected to cope with even a fraction of the needs of the situation.

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As declared by the President the science and practice of Ophthalmology has made considerable progress during the last seventy years. Space prevents us from dwelling at length on the various inventions like those of the ophthalmoscope and of the apparatus for the therapeutic application of BUCKY'S Rays in herpetic ulcers of the cornea, blepharitis and episcleritis ; on the influences shed upon ophthalmic practice by Pasteurism as well as the triumph of recent operative skill like that of VON GRAEFE.

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The evil must be dealt with from a preventive as well as a curative aspect. Amongst etiological factors syphilis, gonorrhœa, small pox and

other infections may be mentioned as easily preventible ones ; while poverty, ignorance and semi-starvation though preventible through strenuous human efforts are not easily preventible in India in the present circumstances. Every endeavour should be made towards achieving this end. "In well-organised countries the blindness attributable to small pox is almost done away with. Trachoma has been practically eliminated from the British Army and the Poor Law Schools of London by observation of scrupulous cleanliness and segregation. Syphilis undoubtedly, a most potent cause of blindness is slowly being brought under control, and the attention of European ophthalmologists is now directed towards preventing phlyctenular ophthalmia and keratitis by avoidance of overcrowding and improvement in hygienic measures" and there is no doubt the results of an intensive well-organised preventive as well as curative campaign against blindness will be highly successful in this country as well.

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It is only possible for us to touch briefly on some of the more salient features of the incidence and causes of blindness or partial blindness in India. It is perhaps expected that in a hot and often dusty land where the majority of the people live a life of ignorance and poverty verging upon semi-starvation there should be a high incidence of blindness ; but even if that be so, their prevalence might be considerably curtailed and their virulence modified by adequate preventive measures and better and wide facilities for treatment.

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We congratulate the President and members of the All India Ophthalmological Conference on their earnestly taking up this noble task and trust they will have a useful future before them.

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We much regret that an error should have crept into the article entitled "Preventive Inoculation against Cholera" which appeared in our August number. The phrase in question which reads "American and German vaccines received from the Bactroclinical Laboratory, Calcutta" should have read "The vaccines received from the Bactroclinical Laboratory or from American or German Laboratories."

A Note on Milk Therapy in Eye Affections especially in the Affections of the Cornea based on the Report of 50 Cases

By D. D. SATHAYE, F.R.F.P.S.

Honorary Surgeon, A. M. C. Free Ophthalmic Hospital.

The use of milk as food is common knowledge. Practically from the time of birth to the last moments of life it is used as life restorative. Nature has made the special provision in the mammalian classes. Deficiency of pure milk in diet especially at the growing age is responsible for the debilitated condition of the body. It was recognised from ancient times of CHARAK and SUSRUT long before the advent of the western so-called medical science. They prescribed milk not only in diet but even as medicine for internal use and also for external application. In the eye diseases they have recommended the use of milk as eye washes and eye drops in various inflammatory conditions of the lids and also in different forms of catarrhal conjunctivitis and ulcers of the cornea. It is also recommended as a wash after operations for granulations, removal of pterygium and the couching of the lens.

Recently parenteral injections of milk has attracted the attention of many eye surgeons. It is especially recommended in gonorrheal ophthalmia and other ocular infections. It is believed that while milk may not be classed as sera its action on the organism is similar. Like all parasera it acts simply as foreign proteins. They have not got any specific or anti-toxic effect. By the injection of milk like other sera the defensive agencies of the tissues are only stimulated. The effect lasts only for a short time and another point to be noted is that it early establishes tolerance to the treatment.

I submit my observations based on the study of 50 cases of eye diseases in which I tried the use of milk injections during the last few months.

Out of 50 cases, 15 were of Kerato-Conjunctivitis, 12 were of Pannus complicating Granulations, 12 cases were of Ulcers with Hypopion, 32 cases were of Perforation of Cornea with Prolapse of Iris, 33 cases were of Spring Catarrh, 42 were of Irido-cyclitis and one case of Panophthalmitis. In the case of the Panophthalmitis there was no improvement. Only one injection was given but there was no reaction of fever; the eye had to be eviscerated. In the three cases out of 4 of Iridocyclitis three with serous exudates improved after two injections and one did not. In the three cases of Spring Catarrh there was seen temporary improvement in the symptoms; but the condition recurred again. In the Perforation of Cornea cases one improved and the other two did not show any reaction. The best results were seen in all cases where the cornea was affected primarily as in ulcers of the cornea, or secondarily as in granular conditions of the lids or inflammatory as in styes, or in catarrhal conditions of the conjunctiva. All Pannus cases got better, that is the superficial vascularisation disappeared leaving the cornea smooth though greyish looking. All the cases of Kerato-Conjunctivitis and pure ulcers improved leaving only an opacity of thin character. In Hypopion Ulcers three out of the twelve cases did not show any reaction; one out of this group of three developed panophthalmitis and the contents had to be scooped out; the other two required more than four injections but later on developed Phthisis Bulbi. In the rest of these cases of Hypopion ulcers, the pus in the anterior chamber disappeared after one or two injections.

The minimum number of injections given was one and the maximum six. After every injection there was fever, the maximum temperature reached being 102°, the fever lasting for a few hours only. The injections were repeated after the third or the fourth day.

I think that some of the eye complaints as granulations styes may be due to the deficiency in diet and it could be corrected by prescribing milk in diet as far as possible in pure or natural state. From the reports of the cases given I find that the injection of milk in Blepharitis and Styes of the lids, in Catarrhal Conjunctivitis and affections of cornea from simple infiltration seen in Trachoma to Purulent conditions of the cornea is very effective and is worth giving a trial even in early stages.

Reports of some of the cases illustrating the truth about milk injection.

Case No 1. MR. N. B. a young Behari gentleman aged ninteen came to the hospital complaining of watering of the eyes and gritty sensation. On examination it was found that he had a chronic granular type of trachoma with presence of pannus in both the eyes in the upper part of the cornea. He was put immediately on the routine treatment for trachoma: H. P. Wash brushing with 25% argyrol with a drop of 1 % atropine. He was given for home use argyrol 4% and yellow oxide and atropine ointment. There was no improvement in symptoms even after one month's treatment. The watering was just as bad as before, photophobia was more trying and the pannus did not show the least sign of retrogression. Another month passed without any improvement. On 13-4-31 exactly after two months I gave him an

injection of milk in 5 c.c. dose. This was followed by another after four days. The condition of the eye showed marked changes. The watering disappeared. The pannus which was originally thick and of blood red colour became of pale rose colour. He could just open the eye with ease.

The third injection was repeated after a week and the fourth again after a week. After the fourth injection the pannus disappeared completely though a little roughness of the surface was present. Two more injections of milk and two subconjunctival injections of normal saline were given. The eye has become practically normal as even the few granulations that were seen at either extremity of the upper lid have disappeared. The healthy condition of the eye has been kept up even after a month, now.

Case No. 2. MR. N. S. P. a young Hindu gentleman, aged 28, teacher, came to the hospital complaining of dimness of vision and watering of the eyes. He was found to show granular type of trachoma with marked pannus in both the eyes. He had undergone the routine treatment for a long time elsewhere but not feeling any relief he came to our hospital. He was put on immediately on milk injection treatment and was given 5 c.c. He came after ten days very much pleased. The superficial vascularisation had disappeared from the left eye but the R. E. showed still a few vessels. He was given another injection of 5 c. c. When he visited the hospital a week after the 2nd dose both the cornea were absolutely free from any vascularisation.

Case No. 3. MRS. A. B. a Hindu woman aged 30 had also Chr. gra. lids with slight pannus. Her cornea became clear after one dose of 5 c. c. of milk injection.

Case No. 4. K. V. a Hindu male aged 40 had pannus in acute stage with minute ulcers of the cornea. Only one injection of 5 c. c. of milk was enough to clear his condition.

Case No. 5. MR. H. N. a Moslem youth aged 26 had pannus with gra. lids. Two injections of 5 c. c. of milk were enough for him.

The other cases showed improvement with one injection only.

The second group of cases consisted of Ulcers pure and Kerato-Conjunctivitis. They were 15 in number.

Case No. 1. MISS C. N. a Hindu girl aged 15 came to my clinic for bad eyes. The eyes were swollen discharging profusely. The lids showed small styes and the cornea of the left eye had an ulcer on the point of perforating. After ten days of daily washing with H. P. lotion and protargol instillation atropine and warm fomentations no improvement was seen. This line of treatment was continued for about a month. The condition of her eyes had made her so helpless that she had to be led by hand. After four weeks of this treatment first dose of 5 c. c. of milk injection was given; this was repeated again after a week. In the beginning of the third week the girl walked in the consulting room without any assistance from her mother. The discharge had stopped, styes disappeared and the cornea began to clear rapidly. She could now see objects clearly. She was given the third injection and for all purposes she is cured.

Case No. 2. MRS. S. D. a Khoja woman aged 50 suffered from acute conjunctivitis with marginal ulceration and blepharitis. She was given two injections of milk of 5 c. c. each. After the second injection the conjunctival discharge stopped, ulcer began healing and the lids began to assume a normal look.

Case No. 3. MISS LILA aged 5 suffered from acute kerato-conjunctivitis with phlyctenules and glands in the neck. The girl was given in all six milk injections in 3 c. c. doses. The eye condition showed marked improvement.

Case No. 4. MASTER V. aged 4 had ulcer of the cornea. One dose of 3 c. c. was enough to bring out healthy condition of the cornea.

The remaining cases improved with one injection each.

The third group of 12 cases of Ulcer with Hypopion.

Case No. 1. MRS. G. H. a Hindu woman aged 40 admitted in the Hospital for ulcer with Hypopion. No improvement with ordinary treatment, so put on milk injection. First injection did not show any change. After four days another injection was given. After 2nd injection pus in the Ant. Chamber disappeared and then the improvement continued.

Case No. 2. MRS. G. G. a Hindu woman aged 50 was admitted to the Hospital for ulcer with Hypopion. The Ant. Chamber was full. Paracentesis was done and one dose of 5 c.c. of milk injection was given. The chamber became again full after a few days. Again paracentesis was done and a second dose of 5 c.c. of milk was given. The chamber remained clear and the improvement kept up. Pt. was discharged cured.

Case No. 3. MR. R. R. aged 35 suffered from ulcer with Hypopion. Paracentesis and two injections of milk were given and the Pt. discharged cured after two weeks.

Case No. 4. MR. L. P. a Hindu aged 55 required two injections.

Case No. 5. MASTER S. D. aged 6 improved after two injections.

The other cases improved after one injection each.

All-India Ophthalmological Conference

Detailed Proceedings

The Second Conference of the All-India Ophthalmological Society was held at Bangalore in the Buildings of the Apex Bank Ltd., from 20th to 22nd July, 1931. There were over forty delegates from all parts of India except Bengal and Burma. It is to be noted that service men were conspicuous by their absence.

RECEPTION COMMITTEE CHAIRMAN'S ADDRESS.

DR. B. K. NARAYANA RAO, M. B., M. R. C. S. (Eng.), D. O. (Oxon), of the Minto Ophthalmic Hospital, Bangalore, the Chairman of the Reception Committee, opened the proceedings of the Conference by welcoming the delegates.

In the course of his address he said :

As this annual Conference of Ophthalmologists is a new movement in India, a brief reference to its origin and its objects may not be uninteresting to you. About fifteen months ago, a few of our Ophthalmic Surgeons belonging to different parts of India formed the idea of organising

an institution of this kind and when they wrote and consulted others in the profession, the response that came was both enthusiastic and wide spread. It was recognised on all hands that such a move had indeed been long overdue in view of the fact that eye-diseases form a very considerable portion of human sickness in this country and that few other countries can offer a scope at once so large and so varied, both for the study of Ophthalmology and for its practical administration. It was also felt that the contribution made to scientific knowledge by eye-surgeons of India has by no means been commensurate to the opportunities they have had. True it is that services of enduring value have been rendered on the operative side of our science by eminent members of the Indian Medical Service such as HERBERT, ELLIOTT and SMITH; but of the possibilities of achievement on the scientific side much remains yet unexplored; and such an exploration can proceed satisfactorily only when there is a central organisation to encourage effort, to co-ordinate experiment and study and to facilitate the exchange of information and ideas. It is the general realisation of this need that gave birth to the Conference which met for the first time in May last year in Bombay, under the able presidency of our friend DR. B. G. S. ACHARYA of Lucknow.

I could assure the Conference that the medical profession in Mysore is keenly alive to the value and importance of such a gathering. We have already a Medical Association here revived and made stronger three years ago under the inspiration and stimulus supplied by our Dewan Saheb and working at present under the energetic guidance of our Senior Surgeon, DR. S. SUBBA RAO. The Association has so far held three annual conferences and several periodical meetings; and we have no reason to be ashamed of the output of scientific knowledge and ability seen at these meetings. As one actively connected with medical education under the auspices of the University of Mysore for several years, I have no hesitation in saying that these conferences and discussions have served in no negligible manner to enhance the efficiency of our work and to provide an investigating atmosphere to our physicians and surgeons as well as to our students.

While all of us wish sincerely that it had been possible for us to assemble in larger numbers, we cannot help recognising the great difficulties which stand in the way of members of our profession, for all their eagerness, to meet at one place in this country of continental distances. Surgeons having the responsibilities of extensive private practice or of large popular hospitals—which unfortunately are often singlemanned institutions—cannot absent themselves from their posts of duty for any length of time without serious harm to the interests of the public concerned.

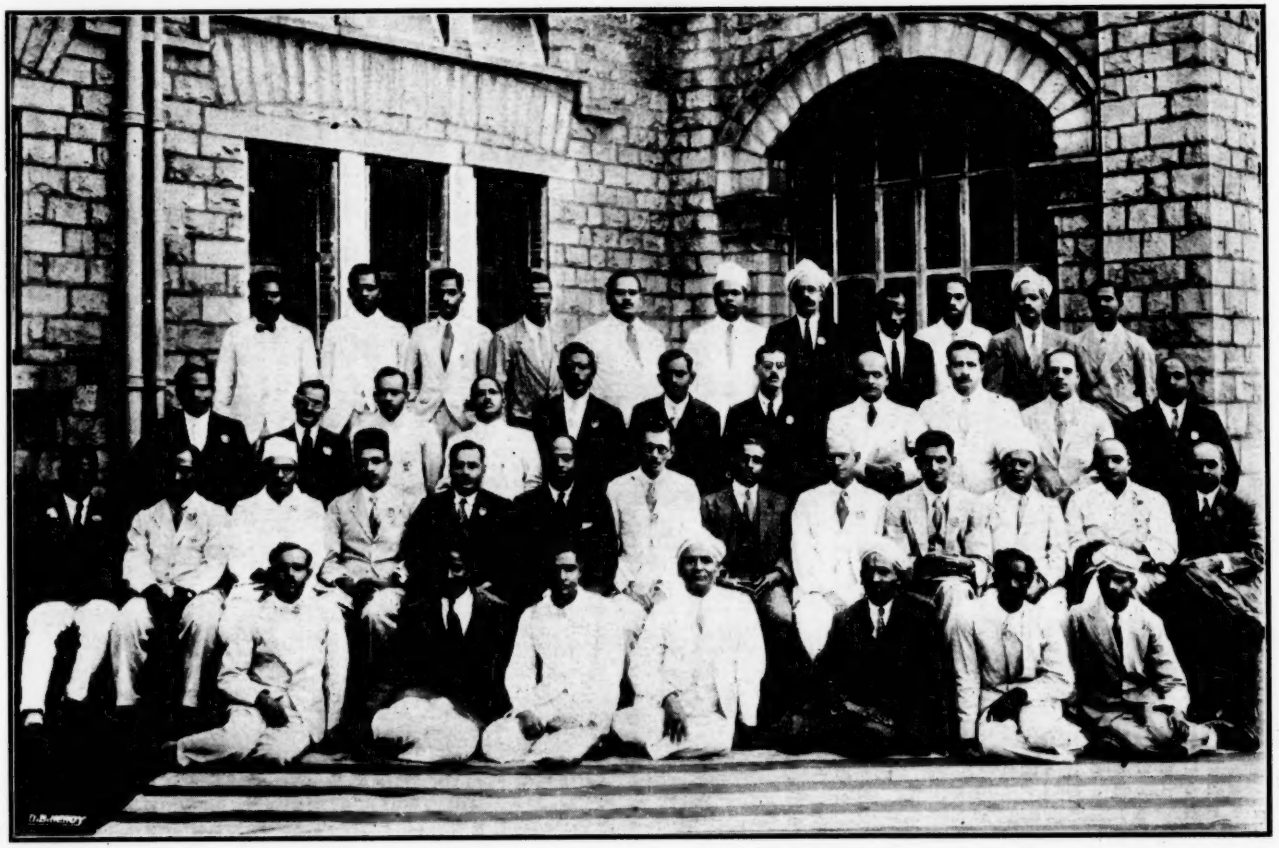
It is this circumstance no doubt, that has deprived us to-day of the pleasure of having in our midst some of the best reputed eye-surgeons, especially those of Bengal and Burma. All the greater therefore is our feeling of gratification that members have found it possible to come from other remote parts—from the Punjab and the U. P. in the North and from Travancore and Cochin in the South. Our neighbouring presidencies of Bombay and Madras have sent their quota and the Central Provinces and Hyderabad have also joined us. To all these friends and colleagues, we are truly grateful.

Many problems of importance not only to the practitioners of Ophthalmology but also to all interested in public well-being await the attention of our Conference; and I have no doubt they will be the subject of our deliberations. Among them I would specially mention two as more urgent: *firstly*, the study and treatment of ocular diseases born of dietetic deficiencies and of social diseases and *secondly*, securing to Ophthalmology the relative emphasis that is due to it in the scheme of medical education in India—as well as in the provision of medical help to the public by the State.

The first is a matter that demands the employment of all the technical knowledge and skill of which we are capable; the second needs the co-operation of Universities and Governments. We have to think of ways of answering both.

The foundations of ophthalmic work were laid in Mysore thirty four years ago by the late DR. S. V. RAMASWAMI IYENGAR, and since then it has grown and expanded continuously under the fostering care and munificence of the Government of His Highness the Maharaja. The presence of His Highness's Chief Minister in our midst to-day to inaugurate this session of the Conference is the latest of the many proofs of his warm interest in the progress of the science of Ophthalmology and his anxious desire to see its services extended. He has tapped for our public institutions many sources of private philanthropy; and he has evinced a uniform anxiety to promote scientific investigation and learning so as to secure relief to the afflicted.

When speaking of his kindness to us it is impossible for me not to refer to a personal experience. On the day of my leaving for Bombay a year ago to attend our first Conference, I called on him and with great hesitancy represented the desirability of inviting the Conference to Bangalore for its next session. At once he was pleased to express his approval in the kindest terms; and his encouragement to us has been constant and stimulating. The Government of Mysore have readily granted all the facilities



By Courtesy of] [*The Ophthalmic Bulletin*

Second All-India Ophthalmological Conference
Bangalore
20th to 22nd July, 1931.

we needed and to them we offer our assurances of heartfelt gratitude. Our sincere thanks are due no less to the many members of the medical profession and of the general public who have honoured us by responding to our invitations and so evincing their interest in our Conference. Sir MIRZA M. ISMAIL SAHIB has added one more to the already long list of causes for our gratitude to him, by having so graciously agreed to make it possible, amidst his many cares and duties to come to us this morning and give us his message of goodwill and sympathy.

THE DEWAN'S OPENING ADDRESS.

In declaring the Conference open, SIR MIRZA M. ISMAIL said :

It was with no little diffidence that I agreed to the suggestion of DR. NARAYANA RAO to open this highly technical Conference, but I felt that, while I might not have anything of any value to say to you on this occasion, it was my duty and a most pleasant duty it is, to extend to you all personally a very hearty welcome to Bangalore and to do anything that I could to make your visit to this city interesting and enjoyable.

The All-India Ophthalmological Society has been in existence for barely two years. Its chief object, in the words of DR. BANAJI, is to co-ordinate the efforts of individual workers. It is said that the best companionship by far is the companionship of effort. The mere fact of workers in a common field coming together once a year will in itself exert a powerful influence not only in creating a feeling of comradeship among them all but also in stimulating efficiency and research. Somehow India in spite of the unfortunate fact that it is the home of many a devastating disease, has contributed very little to medical research. Her share in the progress of medical science has been negligible. It is difficult to account for this, but it is possibly due to want of proper facilities. Let us hope that in the years to come she will produce men of the front rank in medical discovery as she has in the domain of physics and chemistry.

The last decade or two has witnessed an extraordinary increase in man's insight into nature, in that knowledge that has enabled him without increasing the power or scope of his intelligence, to multiply manifold those comforts which have now passed into the necessities of civilised existence. This country has still to take the fullest advantage of those comforts, departing from the old traditional ruts in which she moved through centuries of time.

Considering the prevalence of eye-diseases in India, it seems to me that facilities for the treatment of these diseases are extremely inadequate. More eye-specialists and eye-hospitals are needed in this country.

We have in this State an Ophthalmic Hospital in Bangalore under, if DR. NARAYANA RAO will allow me to say so, a most popular and able specialist. Another is in course of construction in Mysore, where there is already a department of Ophthalmology under a specialist attached to the General Hospital. It is proposed to have a similar department at Chikmagalur which is the headquarters of a district in the western part of the State.

In this way the Government of Mysore hope gradually to provide adequate facilities for the treatment of eye-diseases in the State. We believe in a policy of sending our medical men to Europe for training in all branches of medical science. At present, we have at least five highly qualified ophthalmic surgeons in the Medical Department. We wish to encourage private practitioners too. But the trouble is that the more efficient the Government hospitals are, the more difficult it seems for the private practitioner to flourish. The only remedy appears to be to charge those who can afford to pay a scale of fees which will prevent them from confining their patronage to the hospitals.

Gentlemen, I do not think I need detain you any longer. I will close with an expression of my sincere good wishes for the success of your Society. I hope that it will extend its sphere of usefulness year by year, that it will attract more and more members, and that it will make a notable contribution to the stock of ophthalmic knowledge.

Lastly, I hope that your present session will be a most successful one and that it will not be long before Bangalore attracts you once again.

ELECTION OF PRESIDENT.

On the motion of DR. P. R. SUBBA RAO (Mysore) seconded by DR. E. V. SRINIVASAN (Madras), DR. B. P. BANAJI, F.R.C.S.I., of Bombay was elected President.

The President then delivered his address (Vide ante p. 18).

PAPERS READ.

The following are some of the important papers read before the Conference :

1. Discussions on Cataract Extraction—by DR. RATNAKAR of Bombay.

2. Mooren's Ulcer.

3. A review of the development, phases and contributions of Indian ophthalmology and a brief outline of its future development—by DR. SHROFF of Bombay.

4. Operation for Cataract—by V. SURYANARAYANA, L. M. P., Tanali.

5. A case report on paralysis of 4th nerve after fall on the head—by G. ZACHARIAH, M.R.C.S., D.O.M.S., Madras.

6. A Family of Grohnouw's Dystrophy—by E. V. SRINIVASAN, M. B. and C. M., Madras.

7. An interesting phenomenon in a case of Ectopia Lentis—by E. V. SRINIVASAN, M. B., C. M., Madras.

8. On Intracraninal Neoplasms and Eye sight —by DR. DHRUV of Bombay.

9. Some observations on the treatment of Glaucoma.—by DR. BANAJI.

10. Rhino Sporidiasis of Eye and Nose—by DR. B. K. NARAYAN RAO.

11. A few rare complications during and after Cataract Operations—by E. V. SRINIVASAN, M. B. and C. M., (Madras).

12. Report on a case of Mikulicz's Syndrome—by P. R. SUBBA RAO, L. M. S., L. R. C. P. & S., D. O. M. S. (Eng), D. C. O., (Vienna) of Mysore and M. AUTHIKESAVALU, L. M. P.

13. Report on five cases of Hysterical Blindness—by R. P. RATNAKAR, L. M. S., D. O., D. O. M. S., Bombay.

14. Eys of Albinos—A study of four cases—by B. K. NARAYANA RAO, M. B., M. R. C. S. (Eng.) D. O. (Oxon) and H. V. RAMASWAMY L. M. S., Bangalore.

15. Interesting cases of Unilateral Exophthalmos—by C. N. SHROFF, M.B.,B.S.,D.O.M.S., Bombay.

16. Bilateral Staphyloma of Cornea in a child associated with peculiar symmetrical scars on the body—by B. VENKATA SUBBA RAO, B. A., M.B., B.S.

17. A note on the seasonal prevalence of Catarrhal Ophthalmia in Bangalore—by B. R. RANGANATHA RAO, L.M.P., Bangalore.

18. Report on a case of Amaurosis in a child of one year—by P. R. SUBBA RAO I.M.S., L.R.C.P. & S., D.O.M.S., (Eng) D.C.O., (Vienna), Mysore

DR. B. K. NARAYAN RAO demonstrated with photographs, drawings and instruments, useful modification of three eye instruments.

THE ENTERTAINMENTS.

Various entertainments were arranged by the organisors of the Conference for the benefit of medical men attending, the chief among them being—

(1) Cinema Demonstration by the Health Department of the Mysore State.
(2) Annual Dinner of the All-India Ophthalmological Society of India.
(3) An "At Home" by the Dewan to the members of the Society.
(4) A few interesting operations arranged at the Minto Ophthalmic Hospital.

A group photograph was also taken on the 22nd morning.

NEXT CONFERENCE.

The next Conference will be held in Calcutta in the cold weather of 1932, when it is expected Prof. FUCH of Vienna will grace the occasion with his presence.

Honorary Help in Hospitals in Madras

South Indian Medical Union's Proposals.

The South Indian Medical Union have presented an exhaustive memorandum to the Surgeon General to the Government of Madras suggesting improvements with regard to the system of appointing honorary medical officers to the various Government institutions. The following are some of the important suggestions contained in the memorandum :

The Union suggest to divide the official medical profession into two main groups :

PAID MEN.

(1) Preventive Side—Health Department.
(2) Research Department.
(3) Provincial Service.
(4) Full-time officers for certain teaching appointments as Anatomy, Physiology etc.

HONORARY MEN.

(1) Honorary Surgeons and Physicians.
(2) Honorary Assistant Surgeons and Physicians :
   (*a*) Teaching Hospitals.
   (*b*) Headquarter Hospitals.
(3) Clinical Assistants :
   (*a*) Youngmen doing Post Graduate work.
   (*b*) Men in practice coming for Hospital experience of modern methods.
(4) House Surgeons and Physicians.

SCHOLARSHIPS.

The Memorandum urges the importance of granting scholarships by the Government to such of those Honorary Officers who have been work-

ing in a particular department for study abroad. Mellowed by age and experience with a definite objective before them and unhampered by anxieties about examinations, they are the persons most likely to be benefited by study abroad. These men have no higher emoluments to expect or look forward to in the service. Hence their periods of study abroad are likely to be used to the fullest advantage and to the greatest benefit to the hospitals or appointments they hold. Such scholarships will involve no expense to the Government ultimately, as these men are not looking forward to a Civil Surgeoncy with its higher pay.

The Government should also grant similar scholarships for periods of 1 to 3 months to those Honorary Officers who work in the Mofussil Headquarter Hospitals and who would like to increase their knowledge.

MAIN ADVANTAGE.

It is admited that the Government will, even after starting this scheme, have to maintain a paid Medical Service as at present, but it will be only on a lesser scale ; for in smaller towns and Taluka Headquarters where an honorary medical man will not get enough scope for practice, Government will have to utilise their paid men. The main advantage of this scheme is a more comprehensive medical relief of the Presidency, the City and Mofussil Headquarter Hospitals being left in charge of Honorary Medical Officers and the outlying smaller towns and large villages being directly looked after by Government with the aid of their paid service. Under the existing system the people in the smaller towns and villages got very inadequate medical relief being far away from the Mofussil Headquater Hospitals and have therefore no easy access to them. They are at present catered to only by the poorest type of practitioner.

The Honorary System, on the other-hand, makes it possible for a release of a number of efficient men of the Paid Service from the City and Mofussil Headquarter Hospitals, and utilisation of these men in the outlying areas.

DETAILS OF ORGANIZATION.

Under such a scheme as is outlined the future of the medical relief of the country will be organised as follows :

(1) Honorary Medical Officers attending to the medical relief of the City and Mofussil Headquaters.

(2) A paid Medical Service attending to the needs of the people in the smaller towns, round which will be aggregated the Rural Medical Practitioners who look after the villages. Members of the this group will be available for any urgent work in the villages.

CLINICAL ASSISTANTS.

"It is essential to increasing efficiency in the medical service of the community that as many doctors as possible should be able to take part in hospital work. This would widen their experience and knowledge and bring them into closer contact with their colleagues." Consequently the Union proposes that Clinical Assistantship in the Hospitals may also be thrown open to men who have settled down in practice but are anxious to keep pace with the trend of modern developments in medicine. These men may be allowed to do Post-Graduate work in the hospitals. This is the other type of Clinical Assistants mentioned earlier in the memorandum.

COURSE FOR THE IMMEDIATE PRESENT.

As the scheme suggested will take 4 or 5 years to be brought into full operation it is suggested that during the transition period a beginning should be made in the appointment of House Surgeons and House Physicians and Clinical Assistants, and wherever possible men with the required experience should be appointed as Resident Medical and Surgical Officers and Registrars. As regards Assistant Surgeons and Surgeons it may not be possible to insist on the necessary qualifications during this transitional period. It may, therefore, be waived for the time, and men with at least 5 years' experience may be selected for Surgeoncy.

FURTHER RECRUITMENT MUST STOP.

The Union feel very strongly that the system of Honorary Medical Relief is not likely to succeed if further recruitment to the Paid Medical Service as at present organized is not put a stop to at once. At present the graduates mostly work with one end in view and that is to sit for a competitive examination and enter the Paid Service. Unless this condition is altered and further recruitment stopped, it would be very difficult to get the best type of men to choose the Honorary Course.

Once recruitment stops, a Medical Graduate would look round to the best method of making a living and he would find that Honorary System gives him the best chance of a hospital connection and the best means of enhancing his value as a private practitioner. There will then be no dearth of men for the Honorary Service.

Honorary Medical Relief Scheme in Madras

Government Committee's Report.

Sometimes back Government of Madras appointed a Committee to consider the question of revising the rules relating to honorary medical officers and certain terms of reference.

The committee consisted of Major-General C. A. SPRAWSON, C.I.E., V.H.S., I.M.S., (President); Members: LT. COL. R. G. G. CROLY, I.M.S., Superintendent Government General Hospital, Madras; DR. A. LAKSHMANASWAMI MUDALIAR, B. A., M. D.: DR. N. VENKATASWAMI CHETTI, M.B., C.M., District Medical Officer, Chingleput; DR. T. KRISHNA MENON, M. B., C. M., M.R.C.S., L. R. C. P.; DR. T. SATAKOPAN, M. A.; DR. U. RAMA RAO, L.M.P.; DR. K. B. BHUJANGA RAO, L.M.P.; and DR. C. NATESA MUDALIAR, L.M.S., M.L.C.

The following recommendations are made by the Committee:

I. It was agreed that the designation "Honorary Sub-Assistant Surgeon" should be discontinued and that holders of the L. M. P. qualification would be eligible for appointments and for the same nomenclature as medical graduates.

II. No Honorary Medical Officer shall serve in that capacity once he has completed his 55th year.

III. Nomenclature of the Honorary Medical Officers should be considered separately as regards teaching and non-teaching institutions.

NON-TEACHING INSTITUTIONS.

It is decided that there should be three grades of honorary medical officers: (1) Clinical Assistants, (2) Honorary Assistant Physicians, (3) Honorary Physician and Honorary Surgeon.

Honorary Medical Officers appointed for a speciality such as Ophthalmology, Ear, Nose and Throat work, Pathology and Radiology, Venereology, Dermatology including leprosy work, will be appointed to one of the three above grades with further indication as to their speciality. Ordinarily an Honorary Medical Officer will start from the lowest grade and gradually work up; in exceptional cases and for special reasons the recommending authority may propose deviations from this course.

1. *Clinical Assistants.* The minimum period that an Honorary Medical Officer shall spend as a Clinical Assistant is two years. From this period the period spent as House Surgeon or House Physician in a Government Hospital may be deducted. The maximum period during which an Honorary Medical Officer can remain as Clinical Assistant is 5 years.

2. *Honorary Assistant Surgeon or Assistant Physician.* There should be no time limit for the tenure of office of an Honorary Assistant Physician.

3. *Honorary Surgeon and Honorary Physician.* Higher academic qualifications although a recommendation shall not be considered essential for these Honorary Surgeon or Physcian appointments. But the applicant should satisfy one or more of the following demands: (*a*) that the practitioner has held hospital or other appointment affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service rendered and has had actual recent practice in performing the service rendered or services of a similar character, or (*b*) that he has had special academic or postgraduate study which comprises the service rendered and has had actual recent practice as aforesaid, or (*c*) that he is generally recognised by other practitioners in the area as having special proficiency and experience in a subject which comprises the service rendered.

TEACHING INSTITUTIONS.

It is decided that there should be three grades of honorary medical officers: (1) Clinical Assistants, (2) Honorary Assistant Surgeons or Honorary Assistant Physicians, (3) Honorary Physician and Honorary Surgeon.

Honorary Medical Officers appointed for a speciality such as Ophthalmology, Radiology, Venereology, Dermatology including leprosy work, will be appointed to one of the above three grades with further indication as to their speciality.

Ordinarily an Honorary Medical Officer will start from the lowest grade and gradually work up. In exceptional cases and for special reasons the recommending authority may propose deviations from this course.

1. Clinical Assistants in all teaching institutions must hold the degree of M.B., B.S., or its equivalent. The minimum period of appointment should be for two years and the maximum for five years. If an honorary Medical Officer has served as House Surgeon or House Physician this shall be taken as a recommendation for his appointment as such a period as House Surgeon or House Physician may be allowed to shorten his period as a clinical assistant by a maximum of one year.

2. *Honorary Assistant Surgeons and Physicians:* There should be no time limit for

tenure of office of an Honorary Assistant Surgeon or Honorary Assistant Physician. An Honorary Assistant Surgeon or Physician must have previously performed a minimum period of two years as a Clinical Assistant of which up to one year may be shortened by previous service as a House Surgeon or House Physician.

3. *Honorary Physicians and Surgeons.* One of the following academic qualifications shall be considered essential—M. D., M. S., M. R. C. P., F. R. C. S., or one of the special diplomas signifying skill in the speciality of his appointment.

4. *House Surgeons and House Physicians*: The qualifying period as House Surgeon or House Physician must be spent in a hospital approved for that purpose by the Surgeon-General. Though a residential qualification in the hospital is not essential for a House Surgeon or House Physician it is considered preferable. The service of House Surgeon or House Physician is to be whole-time at the hospital he serves. He cannot engage in any sort of private practice during his service as a House Surgeon or House Physician which is to be counted towards the deduction of the period to be spent as a Clinical Assistant.

For Honorary appointments the recommending authority to Government should be as heretofore the Surgeon-General.

The Committee considers that it is impossible at the present stage to specify exactly whether any more or how many paid Government Medical Officers may be replaced by Honorary Medical Officers, but the number should certainly increase and the Surgeon-General will indicate so far as possible when and where this can be done.

DUTIES.

Allocation of Duties to Honorary Medical Officers: In both teaching and non-teaching institutions the Honorary Officers of the third or highest grade Physician or Surgeon, should always have a certain number of hospital beds in their charges. As regards officers of the other two grades the allocation of their duties either in the in-patient or out-patient department or in both will be done by the Superintendent of the Hospital in the Madras City or by the District Medical Officer in the moffusil leaving the Surgeon-General as a possible source of appeal, if necessary.

Medical Officers desirous of honorary appointments in special subjects, but who have not had the special training necessary to give them proficiency in that subject should be trained free of cost at one of the Government Medical Colleges or hospitals attached to a teaching institution for the period considered necessary by the Surgeon-General to give them proficiency, on condition that they execute a bond to the effect that they will serve Government as Honorary Medical Officers in that speciality for a minimum period of two years at a place to be agreed to beforehand by the applicant and the Surgeon-General.

Times of Attendance: (*a*) Honorary Medical Officers who have charge of hospital beds should attend the hospital daily except Sundays. Medical Officers who have only out-patient department in their charge may attend daily, but need not attend, after previous arrangement with the Superintendent of the hospital and the District Medical Officer, more than three days a week. (*b*) In non-teaching institutions honorary medical officers must make their hospital visits during the recognised hospital working hours. (*c*) In the case of teaching institutions the honorary officers shall be present at the respective hospitals on such days and at such hours as may be necessary for the proper instructions of the student; *vide* rule 10 of G. O. No. 1373 P. H. dated 31st May. 1929: "In the hospitals which form training grounds for medical students, the honorary officers will be responsible for imparting clinical instruction to students in connection with the beds in their charge in accordance with such plans as may be laid down by the professor in charge of the medical or surgical unit or by the Superintendent of the hospital." (*d*) In the case of Clinical Assistants, Honorary Assistant Surgeons and Honorary Physicians, the hours of attendance at the hospital will be laid down by agreement with the honorary officer and the Superintendent of the hospital after approval by the Surgeon-General.

Reports on officers: There should be confidential reports on honorary medical officers submitted annually to the Surgeon-General in the same manner that confidential reports are submitted on Government officers. It will be advisable to devise a special and simpler form for the reports on Honorary Medical Officers.

LEAVE.

Casual Leave: Up to 15 days in a year as to Government Medical Officers;

Ordinary Leave: May be granted up to one month in a year. More than one month cannot be given except in cases of sickness. The one month a year leave can be accumulated up to a maximum of 3 months at one time.

Sick leave: Can be given on an acceptable medical certificate.

Long leave: Honorary Medical Officers should be considered available for long leave on the following terms. An Honorary Medical Officer should be considered to have a lien on his appointment during long leave if he has served at least one year and desires a period of study

leave, but if it does not include a period of study, then he should have served at least five years before being considered to have a lien on his appointment.

The period of lien may extend to two years' absence if the leave includes a period of study; but only to one year's absence if the leave does not include a period of study. Substitutes for Honorary Medical Officers during the period of their leave will be arranged by the Superintendent of the Hospital. Honorary Medical Officers are expected to aid the Superintendent so far as possible by giving as long notice as possible of their expected absence and by full appreciation of their responsibility towards their patients.

Termination of Service: A notice of three months as already laid down is necessary on either side.

Re-employment: If an Honorary Medical Officer be re-employed after discharge he will be accepted into his former rank.

TRANSFER.

Transfer of Honorary Medical Officers from one hospital to another in Madras City will be effected by the Surgeon-General having regard to the needs of the hospital concerned and provided the transfer be agreeable to the Honorary Officer concerned.

Salary of paid appointments when filled by Honorary Medical Officers: 1. Recognising the limitation of the terms of reference of this Committee and without recommending any increase of expenditure the Committee express the opinion that when an academic appointment is combined with honorary clinical work the honorary medical officer holding these two appointments should receive a remuneration for the academic teaching. 2. If an honorary medical officer be put in charge of a hospital or dispensary during the absence on leave of a Government Medical Officer, he should be paid an honorarium not for professional work but for the administration of Government affairs that he carries out during that period.

Special Cases: The Committee considers that graduates who have served as House Surgeons and House Physicians and have been selected or may be selected after the competitive examination for Assistant Surgeons in the year 1929 may be permitted to commence service in an Honorary appointment in the grade of Honorary Assistant Surgeon or Physician.

Medical News and Notes

[Items of news and notes of general interest to the profession for incorporation in this section from the members of the profession will be greatly appreciated—EDITOR]

New Building for a Bombay Eye Hospital. Mahatma GANDHI laid the corner stone of the new building of the Aimai M. C. Free Ophthalmic Hospital on the 8th August last at Parel.

The institution started in July, 1914 had a humble beginning. Originally there were only 6 beds but with the increase of work they had to be increased to 12 and later to 18. The institution started with three objects in view *viz*, to serve the humanity; to give facilities to students to study ophthalmology and thus to enable them to treat mofussil eye patients in a better way; and to encourage research in eye diseases. After a few years of its existence MR. MERWANJI DADABHOY, a rich and generous Parsi gentleman of the locality offered for the use of the hospital nearly a third portion of his chawl at a nominal rent of Re 1 per month as long as the hospital remained. The hospital was hence called the Aimai Merwanji Chamarbagwala Free Ophthalmic Hospital after the name of his deceased wife. This building has an accommodation for 32 patients. Even these were found to be insufficient and so the promoters of the hospital decided to erect a large bulding that would accommodate 75 beds in addition to the pathological and bacteriological laboratories, a large library and a museum for the postgraduates and a lecture hall for the College of Ophthalmology.

The number of students and practitioners that took advantage of the hospital during the last eight years was 500. The popularity of the Hospital may be gauged by the progressive increase in the number of new patients which was 1,234 in the first year, 6,427 in the fifth, 9,200 in the tenth and 9,606 in the fifteenth year. Last year (1930) the figure rose to 9,969.

Mahatma GANDHI in laying the foundation thanked the Parsi donor for his generous support to the Eye Hospital and was very glad to learn that MR. RATANSHA, son of MR. MERWANJI and other members of the family cherished the same feeling of good will towards this institution. He said that the institution deserved every kind of consideration and would not be wanting in help from the family members of MR. MERWANJI and the public. He was pleased to find one more

example of philanthropy in the Parsi community, which was known for its cosmopolitan charity.

* * * * *

A New Health Institute and Sanatorium. His Highness the Maharaja of Kolhapur laid the corner stone of the building of the Karnatak Health Institute and Sanatorium near Hukeri Railway Station on the 1st September.

In course of his address His Highness congratulated the promoters of the Institute for founding it in such a salubrious place as Hukeri and for having the services of eminent doctors to conduct it. Although there was already a sanatorium in Kolhapur, he declared, he preferred this place from the point of climate etc. Hukeri being not far from Kolhapur, many of his subjects would avail themselves of this Institute.

His Highness gave a donation of Rs. 6,000 to the institute.

* * * * *

An Honor Rightly Deserved. Our hearty congratulations to Rai Bahadur DR. MATHURADAS of Mogha (the Punjab) on his being appointed Acting Civil Surgeon, Ferozepore District, and also an Honorary Assistant Surgeon to H. E. the Viceroy. We believe this is the first time that a medical man originally belonging to the Subordinate Medical Service has been so honoured. He is a Rai Bahadur and Kaiser-I-Hind medalist. He richly deserves these distinctions for his notable contributions to ophthalmology.

* * * * *

Proposed Amendment of the Madras Medical Registration Act. It is understood that the sanction of the Government of India has been obtained to the Bill given notice of by MR. DANIAL THOMAS to amend the Madras Medical Registration Act.

In the statement of objects and reasons, MR. THOMAS states :

Certain provisions of the Act are found anomalous having regard to the present policy of the Government towards the Indian systems of medicine. In order to remove this anomaly and to promote free professional intercourse between the qualified medical practitioners of both the Indian and European systems of medicine, it is fit and necessary to amend the sections. Such an anomaly does not exist in the Acts of the Punjab and United Provinces.

By this Bill it is sought to bring the Madras Act in line with the present policy of Government regarding the indigenous systems of medicine, thereby conducing to the best interests of medical sciences and the suffering humanity.

The Bill seeks to add the following proviso to Section *16 (2)* of the Act : "Provided that no medical practitioner shall be removed from the register on the ground of his adoption of a theory of medicine and surgery in accordance with the accepted views for the time being, or of his association with the qualified practitioner of Indian medicine such as Ayurveda, Unani, Siddah or with qualified Homeopath or an unregistered medical practitioner so long as that unregistered medical practitioner (*a*) possesses all the qualifications in the schedule and (*b*) is not a person whose name the council has refused to register on account of any offence or infamous conduct noted in the last paragraph of Section 13."

* * * * *

Retirement of a Popular Professor. Rao Sahib DR. SUNDARA REDDY, F. R. C. S. I., Professor of Anatomy, Madras Medical College, has retired from service recently after a meritorious career in the department. DR. REDDY commenced service in 1899 as a Sub-assistant Surgeon and was promoted to the rank of a Civil Assistant Surgeon in 1908. He was assistant to the Professor of Anatomy till 1921 and when the Professor retired he was appointed to succeed him and he held the office with great credit.

To the students he was known as a strict disciplinarian and a very painstaking teacher. In his retirement the Service loses one of its most capable and experienced members and the college, one of its most able and painstaking teachers.

* * * * *

Forward Madras ! Madras was the first province in India to give women their franchise and a further lead has been given by her in the matter of equality of the sexes by having asked a member of the fair sex to address her new graduates at the Convocation. It is not only the first time in the history of the University of Madras but it is probably the first time in the history of Universities in the whole British Empire that the Convocation address to the graduates was delivered by a woman. MISS MCDOUGALL, the Principal of the Women's Christian College, Madras is the fortunate recepient of this unique honor.

In her address, MISS MCDOUGALL paid a high tribute to the medical profession when she said "the doctor had with justice been called the fine flower of our modern civilisation. He has rightly come to be regarded as the most trustworthy of beings..... Before you all, gleams and burns the guiding light, the glowing hope that by brilliant conjecture and patient toil of experiment, you may light upon the secret magic which shall meet and overthrow some hideous enemy of man—leprosy, cancer, cholera or even check the onslaught of mental disease and disorder."

* * * * *

A Blind Woman Scientist's Bequest. MISS FLORENCE BUCHANAN, D.Sc, a Fellow of the University College, London, and sometimes a

prominent research worker in the Oxford school of Physiology died last March.

She suffered from failing eye sight leading eventually to blindness and her will directed that her eyes should be removed as soon as possible after death and preserved with a view to their examination. She left £250 for this examination and publication of its results and she also left her own account of the state of her eyes compiled from observations since 1922.

It is understood on the authority of DR. W. T. COLLIER of Oxford, that her wish was carried out.

"It remains to be seen" DR. COLLIER is reported to have said, "whether it will be possible to co-relate her own observations with the examination of her eyes." The work is being undertaken, but it will not be completed for two or three years.

Association Notes

Bengal Branch.

A clinical meeting of the members of the Bengal Branch of the Indian Medical Association was held on Saturday, the 12th September, 1931, at 7-30 p.m. at the hall of the Association at 67, Dharamtola Street, Calcutta, under the chairmanship of DR. D. N. MAITRA, M.B. A large number of medical men and students were present.

DR. K. S. RAY, M.A., B.Sc,, M.B.. Ch.B. (Edin) spoke on "A Plea for the use of Medical Cinematography in the teaching of Medical Students."

The lecture was accompanied by a cinema demonstration of various operations both in India and abroad and included Prostatectomy and Litholapaxy operations by SIR JOHN THOMSON-WALKER and Induction of Artificial Pneumothorax in a patient at Jadabpur Tuberculosis Hospital by the speaker himself.

The following lines from DR. RAY'S speech are interesting :

Although the potential value of cinematography to medical science was realised very early in the history of cinematography it was only 25 years ago that the first attempt to photograph a surgical operation was undertaken. As it often happens to pioneers of all scientific adventures the photographer who undertook to take the photograph of an operation arranged at the West London Hospital fainted towards the completion of the operation, but valuable record was, however, secured. Subsequent progress in medical cinematography was until quite recently rather disappointing. The above unfortunate accident no doubt served as one of the contributory factors in a set back and although enormous sums were spent which led to the rapid achievement of the cinema to its present position as the world's most favourite entertainment, very little use was made of motion pictures in the service of medicine.

With the development of small scale portable motion picture on safety films and with other improvements the difficulties are now overcome. To-day medical science has at its disposal all the apparatus, technical skill and materials necessary for the making of medical and surgical films economically and very efficiently.

In this movement the Medical Department of Kodak Ltd. has played an important part not only in providing men, equipment and material but also in the development of motion picture technique in collaboration with eminent medical men.

In western countries cinematography has now been taken up seriously by the medical profession and already an era of rapid development in this new aid to medical science has taken place in these countries. What used to be merely described to students are now actually shown to them. The task of students and teachers of medical science has been made much lighter than what it used to be in the past.

In India unfortunately very little use is made of medical cinematography but signs of its introduction are already evident and it was a matter of great pleasure to find a cinema demonstration of some rare operations like removal of trichobezoar (Hair balls from stomach) and several orthopoedic operations shown by DR. PARMOR of J. J. Hospital Bombay at the last All India Medical Conference at Poona. To night it is proposed to show a few films taken in some of the Calcutta Hospitals and also a few of the films taken by Kodak & Co. of operations performed by some eminent surgeons of Europe. It is fervently hoped that this demonstration may help to some extent towards the large use of medical institutions in Calcutta for the purpose of teaching the students and thus bring the teaching level of these institutions to the same level as in other institutions in Europe and America.

The Central Council.

Abstract proceedings of the XVII Meeting of the Council of the Indian Medical Association held on the 6th September, 1931 at the Association premises.

Members Present : Sir Nilratan Sircar, Drs. B. C. Roy, S. M. Das, S. C. Sen Gupta, A. C. Ukil, Santiram Chatterji, A. N. Ghosh and K. S. Ray.

Sir Nilratan Sircar was in the chair.

1. Proceedings of the last meeting held at Poona on the 24th, 25th and 27th April, 1931 were read and confirmed.

2. Secretaries' report of the activities of the Central Council for the period from 1st January, 1931 to 30th June, 1931 was accepted.

3. The audited accounts for the half-year ended 30th June, 1931 were placed before the meeting along with the comments of DR. JIVRAJ MEHTA.

4. Resolved that the Comilla Medical Association, Jubbulpore Medical Association, Jalgoan Medical Union and Patna Medical Association be affiliated to the Indian Medical Association.

5. Resolved that the Bombay Branch and the Multan Branch of the Indian Medical Association be recognised.

6. Resolved that the following rule be incorporated in the Rules of the Indian Medical Association :

"The Indian Medical Association shall not be liable for any of the debts or liabilities of any of its branch associations, nor shall any of its branch associations be liable for any of the debts or liabilities of the Indian Medical Association in case of either going into liquidation."

7. Resolved that the following powers be delegated to the Working Committee :

(1) General control of the Association, so long as their action is not in contravention to the policy or wishes or instructions of the Council.

(2) Routine matters of such importance as do not need reference to the Council.

(3) Matters in regard to finance as directed by the Council, collections and disbursements of moneys or sums less than Rs. 1000/-, defrayal of all ordinary expenses, rents, salaries, wages and such other charges as may be necessary for carrying on the work of the Association.

(4) Maintenance and administration of the Association rooms, library and properties and the organisation and direction of publications.

(5) Appointment of Committees and Sub-Committees in connection with any of the above matters.

(6) Representation of any urgent matter in which they consider the interests of the Association or of the medical profession are affected, before Government, public bodies or any properly constituted authority.

(7) Such other functions as may from time to time be delegated by the Council.

Provided always that all matters will be duly and promptly reported to the Council.

8. Regarding steps to be taken about the Poona Conference Resolutions, the Secretaries reported that the steps taken to give effect to the resolutions passed by the Conference had been stated in the report already circulated and accepted by the Council. (*vide* item No. 2)

The Secretaries reported that since the last report was circulated some of the members of the Assembly and Council of State have been requested to move certain interpellations in the Assembly and Council of State.

The Secretaries further reported that copies of the resolutions, presidential speech of Dr. J. N. MEHTA and the speech of Col. BHOLA NAUTH had been forwarded to all members of the Round Table Conference with the request to further the cause of the Indian Medical Profession.

Resolved that the action of the Secretaries in this connection be approved.

9. The Secretaries reported that a sum of Rs. 150/- had been collected in response to the appeal for the touring expenses of the General Organiser.

Resolved that the Secretaries be authorised to inform Col. BHOLA NAUTH that the sum of Rs. 150/- is available for his touring expenses and that he be requested to furnish the Secretaries with a tour programme.

10. With regard to the position of Bombay, the Secretaries placed a letter dated 2nd September, 1931, from Dr. D. D. SATHAYE regarding the formation of a Branch at Bombay.

Resolved that the matter be referred to the Working Committee.

11. The Secretaries placed a letter dated the 27th July, 1931, from the Secretary, Poona Branch of the Indian Medical Association, forwarding the Proceedings of the last All-India Medical Conference held at Poona and requesting the Central Council to publish the same.

Resolved that the Central Council regret that they cannot afford to print the report unless the cost is met by the Poona Branch.

12. Read a letter No. 92 dated the 21st July, 1931, from the Secretary, Delhi Medical Association, requesting the Central Council to modify the Rules of the Indian Medical Association so as to have at least one representative in the Central Council from each affiliated association having 100 or more members.

Resolved that the Council regret that it would not be desirable to modify the Rules as suggested by the Delhi Medical Association.

13. Read a letter dated the 5th August, 1931, from the President intimating that he was leaving for Europe and will be absent till December, 1931. He has suggested that Dr. B. C. ROY who was the President of the Association for the last year and who is a member of the Working Committee should be consulted on all matters for which the consultation of the President was necessary.

Resolved that the suggestion of the President be approved and Dr. B. C. ROY be informed about the working arrangement.

14. Regarding the rent of Premises No. 67, Dharamtala Street, Calcutta :

Resolved that the rent and telephone charges be shared equally between the Bengal Branch of the Indian Medical Association, the Central Council and the Journal Department.

15. The Rules were then considered by the Council.

With regard to the eligibility for membership of the Central Council :

Resolved that those paying the full annual subscription of Rs. 12/- should have that privilege.

Regarding Life Membership.

Resolved that the following be added at the end of Rule 7 clause (d) :

"Out of the sum of Rs. 250/- paid by a life member, Rs. 100/- be paid to the Central Funds and the balance of Rs. 150/- be retained by the Branch to which the member belongs provided the life membership is secured by the Branch concerned. In case the life member does not belong to any Branch and is a direct member, the entire amount of Rs. 250/- be paid to the Central Funds."

Further consideration of the Rules was postponed when the meeting terminated.

Medical Associations, Societies, etc.

Medical Societies, Associations, Unions etc. are invited to make use of this Section of the Journal. —EDITOR.

All-India Medical Licentiates' Association.

(MADRAS BRANCH)

An urgent meeting of the Madras Branch of the All-India Medical Licentiates' Association was held in Madras on the 24th August last when the following resolutions among others were unanimously passed :

1. That this Association strongly urges the Surgeon-General and the Government to introduce the much needed and absolutely essential reform of the introduction of the five years' course in the Medical Schools as early as possible as the medical curriculum extends in no other civilised country for less than five years and as the country is not any more in need of medical men of a shorter training.

2. That this Association views with great concern a wide-spread rumour that there is a proposal to retrench the cadre of Sub-Assistant Surgeons in the Medical Department, Madras and if this be true, the Association humbly begs to place before the Surgeon-General and the Government that this step will adversely affect the interests of the Sub-Assistant Surgeons in Service and the Licentiates in general as well as the public at large, especially the poor and the helpless, even in the remotest hamlets.

3. That this Association begs to submit that it will involve no impairment of efficiency if most of the Taluk Head-quarters are left in charge of the deserving men of the Sub-Assistant Surgeon class since at present, the utility and efficiency of the surgical centres can well be maintained by them, there being now-a-days available for consultation a large number of private practitioners of wide experience and good qualifications in mofussil parts also.

4. That this Association views with grave anxiety the introduction of the system of appointing graduates in the cadre of Sub-Assistant Surgeons which not only deprives the chances of some more of the Licentiates for getting into Service but eventually affects the promotion of Sub-Assistant Surgeons to selection grade appointments.

5. That this Association begs to place before the Government that it is only a very few of the Sub-Assistant Surgeons who have the facilities (pecuniary or otherwise) to obtain higher and registrable qualifications in the United Kingdom of Great Britain and Ireland and other foreign universities, many of them having invariably obtained very high qualifications in minimum periods of study and none of them having so far returned without obtaining at least one registrable qualification of the General Medical Council and hence prays that such men may immediately be promoted to the Assistant Surgeon's cadre either in temporary or permanent vacancies and that a definite

percentage of Assistant Surgeons appointments may be reserved for the Sub-Assistant Surgeon class as is done in the case of Civil Assistant Surgeons for promotion to Civil Surgeoncies. In this connection it begs to point out that the promotion of permanent Sub-Assistant Surgeons to Assistant Surgeons may be guided by the rules in force prior to their leaving India for such studies and that the interests of the permanent Sub-Assistant Surgeons will in no way be hampered by confirmation of the temporary Assistant Surgeons or by a Government order or notification that are passed subsequent to their leaving India and that the number of appointments of Sub-Assistant Surgeons of more than 20 years for exceptional merits as Assistant Surgeons may be increased by at least 50 per cent. and that such appointments may be made without much delay whenever vacancies arise.

6. That this Association would humbly suggest to the Surgeon-General that if retrenchment be inevitable it will not cause great hardship if men with 30 years' service are asked to retire on full pension and allow others to retire who wish to do so on proportionate pension.

7. That this Association most humbly requests that the right of existing men in Service will not in any way be interfered with by the retrenchment proposals and that it also begs to point out any reduction in the starting pay of Sub-Assistant Surgeons for future entrants *i. e.*, below Rs. 75 per mensem will be incompatible with the maintenance of the social and economic status of a medical man and that the maximum pay of a Sub-Assistant Surgeon of Rs. 200 per mensem is below the scale to which members of other non-gazetted services can rise.

8. That the Associations earnestly requests the members of the Senate and Syndicate of the Madras University that the regulations requiring the L. M. P.'s to pass the Intermediate examination of this University before appearing for the M. B., B. S. examination may be modified as it would necessitate an L. M. P. after 4 years' course in the Medical School to join the Arts course once again and hence prays that the University may be pleased to accept any of the examinations recognised by the General Medical Council of the United Kingdom as equivalent to Intermediate examination.

Tinnevelly Medical Association.

A meeting of the Tinnevelly District Medical Association was held on the 22nd August last at the District Medical Office at Palamcottah, with DR. A. KRISHNAIYA, D. M. O., and President of the Association, in the chair. DR. A. R. VISWANATHAN, L. M. S., was "At Home" to the members and opened a discussion on "Typhoid Fever" in which some members participated.

DR. T. N. GOVINDA AIYAR, M.B., C.M., a local medical practitioner, drew the attention of the Association to the circular of the Surgeon-General regarding the disposal of condemned surgical instruments of hospitals. It appears that the orders are to the effect that such instruments, after they are considered unfit for service and found useless, should be auctioned the auction being open only to private medical practitioners of the place. It is reported that DR. GOVINDA AIYAR opined that this circular was not a happy one and the idea that such instruments should be sold in auction to private practitioners implied a reflection, which was not justified.

The President is reported to have replied that the learned doctor had misunderstood the circular in question, that even if there was just cause for a grievance, this Association would not be the right forum for ventilating it and that it was open to DR. GOVINDA AIYAR to draw the attention of the Surgeon-General to the matter in some other manner.

The matter was then not pursued.

Current Medical Literature

The eye in the Tuberculous Patient.

GOLDENBURG & FABRICANT.

Arch. Ophthalmology, V. 1931, 66.

There is a prevalent idea amongst many that the patients suffering from pulmonary tuberculosis rarely get lesions of the eye. This notion activated the authors to make an exhaustive study of a total of 1,178 patients. This number included about 105 doubtful cases but the rest were cases of proved tuberculosis. The study revealed 7 cases which showed pathological changes in the iris and 19 showed changes in the fundus that were diagnosed as tuberculous.

The investigation helps to dispel the rather elusive impression. *S. K. S*

When should a Cataract be Operated on ?

SAFAR.

Weiner klin Wochenschr., No. 10, 1931.

Operation may be performed in old subjects and preferably under local anaesthesia. Diabetics should be made as much sugar-free as possible

and a hypertonic patient should have a venesection prior to the operation. In cases with a cough or a cold the operation should be delayed and in chronic bronchitis with emphysema the operation should be undertaken with total iridectomy to avoid prolapse of the iris. Inflammation of the conjunctiva and the lachrymal sac should be avoided after operation. Removal of the lachrymal sac in case of any secretion from it is indicated and the operation postponed for at least 4 weeks. The lachrymal duct should be irrigated to test its patency in cases with epiphora and the sac should be extirpated in cases of displacements of the nasal duct and thickening of the sac.

The author is of opinion that operation for unilateral cataract should be delayed as long as possible if, of course, the complete visual strength of the other eye is maintained as symptoms due to excessive light, seeing of rays, double vision etc. sometimes follow the operation. Moreover, as long as the other eye is all right a cataract glass seems very uncomfortable to the patient.

Senile cataract if allowed to hypermature endangers the eye and makes the operation difficult. When bilateral cataract exists or in uniocular cataract with poor vision of the other eye, it is not advisable to wait till maturity and the operation is first done on the eye with more advanced cataract formation at a time when the visual capacity of the other eye is no longer sufficient for ordinary occupations. Otherwise the operation may be delayed till maturity. *S. K. S.*

The Non-luetic Argyll Robertson Pupil.

MOORE.

Sind Medical Journal. Vol. IV, No. 2.

FOSTER MOORE observes that whilst the Argyll Robertson pupils are almost always caused by syphilis, there is a definite group of cases of non-syphilitic origin having distinctive characters.

In one such of his cases a hereditary tendency was found. The non-luetic pupils are according to him, very often uniocular and more common in females.

Referring to the characteristics of these pupils it is stated that they are in most cases semi-dilated *i. e*, larger than normal and do not contract to light stimulus whether direct or consensual : they contract with convergence in a characteristically slow manner (taking in many instances 20 to 30 seconds to attain the maximum) and relaxation afterwards is correspondingly slow.

Although no relation to any constitutional or nervous disease was detected in any of his cases the author is of opinion that the existence of this type of pupil should be recognised.

S. K. S.

Is there a Non-operative Treatment of Senile Cataract ?

PETERS.

Forts de Therap. No. 6, 1931.

The value of medicaments in retarding the progress of cataractous opacity is doubtful but in cases of cataract in youthful patients with indications of latent tetany, calcium preparations are worth a trial. Euphakin which contains calcium, thyroid and parathyroid and the male sex hormone is supposed to be of some use in clearing up the opacity of the lens although the final progress cannot be retarded. Iodine preparations are considered to be of real significance and their administration is occasionally successful. Iodine may be prescribed in small doses and at intervals bearing in mind individual susceptibilities to the drug.

The writer condemns the entirely negative attitude towards medicinal treatment of cataract opacity and in support of his statement points out that though not demonstrable experimentally the occasional value of iodine in arteriosclerosis cases is an established fact. The psychic influence on a patient should not be lost sight of and patients have been known to feel at least some subjective improvement.

Further, an improvement of visual capacity can be attained by optical means through the use of stenopeic glasses and the induction of artificial dilation of the pupils in individual cases.

S. K. S.

Iodine in the Treatment of Trachoma.

T. NEUMANN.

(From the Ophthalmic Clinic, University of Warsaw.)

B. Jour. Ophth. Vol. XV, No. 9 Sept. 1931.

The cure of trachoma is a task which frequently affords serious difficulties. In case of advanced trachoma, especially when complicated by pannus, ulcers and infiltrates of the cornea, our ordinary methods of treatment often fail. In such cases copper sulphate does not always relieve, it may aggravate the condition, and the long continued use of silver nitrate, though most useful as long as mucopurulent secretion is excessive, usually leads to argyrosis. It is in such cases that the author has found the application of iodine successful. He was led to try this drug in a desperate case of trachoma, and was so much impressed with the favourable

result that he had given it a repeated trial in bad cases since, always with good results. This paper concerns 15 cases of trachoma treated with iodine. During the past four years and a half he had treated 58 cases of trachoma with iodine, all these cases had been complicated with pannus and corneal ulcers or infiltrated. In all cases infiltrates in the cornea *cleared* with surprising rapidity and ulcers healed; the infiltrates often cleared in 24 hours. Iodine has also a favourable influence in reducing the papillary hypertrophy of the conjunctiva and purulent secretion is markedly lessened. In cases of trachoma the conjunctiva is smeared with iodine once a week or once a fort-night, applying in the meantime copper sulphate stick or massage of the conjunctiva by the method of LIKIERNIK *i.e.*, massage with a glass rod with globular end measuring 8 to 10 m. m. in diameter. The technique of smearing the conjunctiva with iodine is simple—being to wind a wisp of cotton wool round the end of a glass rod and to dip it in 10% Tinct. Iodine; and to take on the end of another glass rod plenty of xeroform or some other unirritating ointment. After having carefully everted the eyelids and protected the cornea, the iodine is smeared over the tarsal conjunctiva and that of the fornix until the cotton wool holding the iodine is dry; if necessary the lower fornix is also smeared. The excess of iodine is then removed with dry cotton wool, the whole area treated is smeared with the previously prepared ointment and the lids are replaced. Occasionally patients complain of the after-effects; in some cases burning feeling is experienced and at times, pain, which may be severe. Should this occur cocaine may be instilled. In some cases patients complained of pain lasting several hours; other cases spoke only of a burning sensation, and in one case the patient went back to work immediately after the treatment and worked for the rest of the day. The immediate result of smearing the conjunctiva with iodine is to produce an inflammatory reaction, this usually reaches its climax on the next day. The secretion from the eye is now plentiful enough, the conjunctiva is whitish grey. Two days later the necrotic conjunctival epithelium has ben cast off and is quickly regenerated. The treatment may be repeated when the inflammatory reaction is over, usually by the fourth day, but no hard and fast rules can be laid down, each case must be treated on its individual merits.

To summarise the indications for the use of iodine are :—1. Trachomatous complications on the cornea. 2. Papillary hypertrophy, with corneal complications. 3. Purulent secretion from the conjunctiva in cases of trachoma which is not controlled by the silver nitrate. 4. Purulent secretion when argyrosis is already present. *A. K. S.*

Non-Specific Protein Therapy.

JOSEPH LEVINE

Arch. Ophthalmology—Vol. 6

(old series Vol. 63) No. 1. July, 1931.

It has been known for many years that an acute inter-current infection has beneficial effects on certain chronic and subacute diseases. In ophthalmology the same premise holds true: many intra-ocular lesions are benefited by the presence of fever. To induce a rise in temperature with leucocytosis, many foreign substances have been injected, those most commonly used are milk, diphtheria antitoxin and typhoid vaccine. There are numerous others and apparently none is entirely satisfactory, but the reason for this is not certain. It is true that leucocytosis and an increase of antibodies in the blood may often be demonstrated after protein shock, but according to PETERSON this is not a constant result following an injection and accordingly it can not be the only reason for the recovery of the patient. Since SCHMIDT and SAXL first used cow's milk in 1916 to induce fever, this form of protein therapy has been the most popular, especially among ophthalmologists. According to MUSKAT, its advantages are: Milk is a universal product; it has a constant chemical composition, and the good reaction is due to its complexity and the variety of enzymes in its cleavage products. He said that one must not use milk when there is a history of hypersensitiveness to milk or its individual proteins or in cases of myocardial involvement, alcoholism or pregnancy. Some do not use any foreign proteins for diabetic persons because of the vascular changes present in this condition. Furthermore, children with asthenia or status lymphaticus should not receive milk therapy as it might prove fatal, while scrofulous children may have fever for several weeks after an injection. These contra-indications, however, are applicable to any form of foreign protein fever therapy; whether it employs milk, typhoid vaccine, serum or COLEY'S mixed toxins. In 1925, HOWARD began to use typhoid vaccine in his treatment for certain ocular lesions among the Chinese in the Peiping Union Medical College, China. In his experience "no benefit resulted from an injection of vaccine that was not followed by fever" and "the degree of improvement seemed to be directly proportionate to the fever reaction." This is undoubtedly the opinion of all who have used non-specific protein therapy. The author used COLEY'S mixed toxin which is nothing but "a mixture of the toxins and derivatives from killed cultures of streptococcus erysipelatis and Bacillus prodigiosus which are grown separately, then mixed, and finally diluted to a definite strength as determined by the percentage of protein contained in cases of acute iritis, uveitis

with keratitis punctata, corneal abscess, corneal ulcer, vitreous opacities with no discernible uveal lesion and post-operative iridocyclitis with uniformly good results because of the fever resulting from the fluid. *A. K. S.*

The Sedimentation Velocity of Blood Cells in Eye Diseases Caused by Vitamin A Deficiency.

I. JOHN

Amer. Jour. Ophthalmology, Series 3, Vol. 14, No. 7.

1. The blood sedimentation test was made in twentytwo patients with vitamin A deficiency diseases, seven of them suffering from keratomalacia, and fifteen with xerotic changes in the eye of different degrees of severity, one patient having only hemeralopia.

2. Six of the Keratomalacia patients showed normal sedimentation figures.

3. Eight of the fifteen cases with xerosis also showed normal sedimentation figures.

4. The increased figures in seven cases of xerosis must be attributed to complications caused by other diseases, because the sedimentation figures, even after healing of the visible changes of the eye after cod liver oil treatment, showed also pathologically increased sedimentation velocity.

5. The sedimentation velocity of the cases with keratomalacia increased after starting treatment with vitamin A. *A. K. S.*

Chronic Constipation (? cause) cured by administration of Pituitary whole Gland.

BERNARD MYERS

The author reported the following in the Clinical Section of the Royal Medical Society on May 8, 1931 :

Lavinia H., aged 20, with a history of chronic constipation since birth, bowels usually acting only once in seven or eight pays, looked and felt ill, had little energy and not much interest in things about her, appetite large, slept well though restless, with family history of a tendency to constipation in the mother's side. Mistura Alba, Liquid Paraffin, etc., failed to have the desired effect, and a skiagram showed ballooning of the sigmoid end of the upper part of the rectum. The skeletal muscles were atonic and the bowels seemed to be in a similar condition.

Treatment : Pituitary whole gland 1 grain was administered t.d.s. after meals, and small doses of liquid paraffin night and morning. The result after a few days was the daily opening of the bowels and this fortunately continued. Two weeks after its use her whole appearance changed—she became a typically happy and healthy girl, full of mental and physical energy.

The pituitary gland was taken for nine months and was then gradually discontinued. The patient at present enjoys perfect health, the bowels acting daily. It would almost appear as if the good health resulting from the giving of pituitary whole gland had the effect of stimulating the pituitary gland to normal action.

Is such a condition related to HIRSCHSPRUNG'S disease ? *A.K.S.*

Treatment of Collapse :

Munch. Med Woch., May 22, 1931, p. 875.

With a view to have an ideal drug for the treatment of collapse a drug which must increase the venous return to the heart from the splanchnic reservoir simultaneously acting as a cardiac stimulant in ensuring the efficient emptying of the heart during systole, DRS. E. HOLZBACH and E. KOTTLORS, after much laborious researches, found out a combination which they tried and found efficiently and successfully combating collaspe produced in animals by such agents as histamine, arsenic, peptone and bacterial toxins. The final composition of the combination was : adrenalin, 0·001 mg. ; Pituitrin (better vasopressin), 0·05 unit ; strophanthin, 0·003 mg. ; ephedrine, 0·1 mg. for each kilogram of body weight. This mixture diluted with 10 C. cm., or more of saline or glucose solution, was given intravenously very slowly. The clinical results are described in a series of patients suffering from various types of severe collapse and they are favourable,—the pulse, colour, temperature of the extremities and the general condition improving immediately. These effects last for some hours. The injection can be safely repeated if required. *A.K.S.*

Carbon Dioxide Inhalation in Hiccups.

New England Jour. Med., June 4, 1931, p. 1183.

Dr. L. A. GOLDEN, following DRS. HENDERSON and SHELDON used this method in the treatment of milder form of hiccup. An ordinary paper bag of medium size is placed over the patient's face, and he breathes in and out of it steadily. In a few minutes the percentage of carbon dioxide is sufficiently high to have a therapeutic effect and the hiccup ceases. In his cases the time required by patients for relief ranged between three and six minutes ; if recurrences occured, these were easily treated along the same lines by the patients at home. *A.K.S.*